

RECENT TRENDS IN NORWEGIAN COASTWISE SHIPPING

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CHAPTER I

INTRODUCTION

Throughout most of Norway's history, sea-borne traffic has been unrivaled as the best means of transportation. The country is long and narrow in shape with thousands of inlets, fjords, and islands along the coast. With an area of only 125,065 square miles it has a tidal coastline of approximately 17,000 miles, 1,650 miles not counting inlets and fjords. About four-fifths of the land area is more than 500 feet above sea level and the average elevation for the whole country is 1,500 feet, as compared with 1,000 feet for the rest of Europe.¹

Because of the rather rugged topography and irregular coastline the development of good overland transport routes has been slow, and the population has tended to concentrate along the coast. Today, almost 90 per cent of the total population is located less than six miles from the coast, and of the twenty largest cities, only two are not located on the coast.

Because of the physical character and the relatively late industrialization of the country, rapid overland transportation was developed later than in most other modern, maritime nations. Before the German invasion in 1940 the traffic on the railroads was fairly insignificant as was the transportation on roads and highways. The Germans have to receive some credit for expanding the railroad and highway networks of

¹Magne Helvig and Viggo Johannessen, Norway: Land-People-Industries, A Brief Geography (Oslo: Johan Grundt Tanum Forlag, 1966), p. 6.

the country. During the war, the traffic on the railroads increased threefold, and the highways between the northern and southern parts of the country were improved.

After the Second World War the Norwegian Government could use all the new railroad tracks and highways, and the domestic traffic in the first years after the war was twice as great as it had been in 1939. The government also started to spend more money on developing the networks, and by the mid 1950's the railroads were highly competitive. Trucking also became very popular in the 1950's, and has especially seen a great boom in the 1960's. During the last ten years the domestic air service has also increased rapidly. Since 1964 the entire country has been tied by the regular scheduled air network, and although it competes mainly for the transport of passengers, certain air-services have also taken over various freight movements.

Purpose of the Study

The purpose of this study is to analyse the trends that have been taking place in the coastwise shipping pattern of Norway since the end of the Second World War, and to see if the trends are similar to those experienced by most other modern, maritime nations.

Considering the rugged terrain and the long irregular coast, and the great concentration of people and industries along the coast, Norway is today probably one of the most sea-oriented nations in the world. With a long history of dependence on coastwise shipping and the relatively late industrialization of the country, it should be very interesting to see if the trends in Norway are similar to those in the other maritime nations that also have a history of dependency upon coastwise

shipping, but in which coastwise shipping has become less and less important with the rapid building of efficient overland transportation routes.

From the study of the transport trends in the four other modern, maritime nations, it appears that the trends are very similar. There is generally a greater increase in the domestic movements of general cargo than in the movement of bulk, and the result is a rapid increase in the relative importance of the overland services, particularly trucking. The coastwise shipping seems to be fairly competitive for the long distance bulk movement, but because of the increasing amount of general cargo, its relative importance is decreasing in all of these countries.

The main objective of this study will then be to analyse the current trends within the coastwise shipping pattern of Norway, and on a comparative basis to see if the trends are similar to those in the other countries, and how the trends might differ. The developments within Norway will be analysed, and the deviations from the general pattern will have to be explained. The interest should lie in seeing if Norway, which seems to be one of the few remaining countries that are totally sea-oriented, will follow the same developments that the other, similarly oriented nations are facing.

Statistics on the different coastwise services were fairly scanty and incomplete in the 1940's, some even until the 1950's. There are complete statistics on the Coastal Express, from Bergen to Kirkenes, from 1950 on, while the other coastwise services, including the local services, were covered from 1953 on. Complete statistics regarding the tramp-freighter services were not available until 1955, and have only been published for the years 1955, 1961, and 1965. Because of these

statistical limitations most of this study is based on comparative figures for the period between 1955 and 1965.

In order to concentrate on the most important aspects of the problem, the study is focused around the three major coastwise services, namely, the coastal services, local services, and the tramp-freighter services. The rural services, inland waterways-services, and ferry-services have been left out, mainly because of incomplete data available, and because of the small percentage of transport work they do.

Coastal Shipping in other Countries

After studying the transportation systems of several industrialized, maritime nations it seems to be clear that the trend is toward a decline in the relative importance of coastal shipping. The rule appears to be that the more industrialized and technologically advanced the countries become, the better their inland transportation networks become, and the coastal shipping services have to compete with faster and more efficient inland services.

The first serious competition came from the railroads, starting as early as half a century ago. The railroad networks of the United States and the United Kingdom were fully developed by the First World War, and provided for faster and, in some cases, cheaper transportation than did the coastal steamers. A decade or more later the railroads could also provide for rapid overland transportation in maritime nations like Australia and New Zealand.

Highway construction started to accelerate after the First World War, and in the 1930's trucking and coach services became popular in these countries. Soon trucking became a severe threat to coastal shipping

as well as the railroads, especially when it came to the movement of general cargo and lighter bulk commodities. Trucking has several advantages over coastal shipping services, as well as most railroad services, such as: (1) higher speed, (2) greater flexibility, (3) lower terminal costs, and (4) door to door services. Truck and coach services are most effective over relatively short distances, while railroads can compete more effectively with coastal shipping over relatively long distances.

The United States. The conterminous United States, one of the great maritime nations of the world with a tidal coastline of more than 80,000 miles, has seen a relatively sharp decline, both actual and relative, in the inter-coastal and coastwise shipping. The inter-coastal lines are today operating approximately 60 vessels, as compared to 143 in 1938. Making allowances for increased size and speed, the present inter-coastal fleet has about two-thirds of the total cargo capacity of the pre-war fleet.²

Along the Pacific coast, where coastal vessels have to contend with short distances between ports, relatively low railroad rates, and a good highway system, the decline has been great. The fleet has been reduced from eleven common carriers operating 26 vessels in 1938 to only one carrier operating three vessels today.

The decline in the Atlantic-Gulf trade has been similar in severity to that experienced along the Pacific coast. Post-war operations along the Atlantic coast are minor as no service is available to

²John L. Hazard, Crisis in Coastal Shipping: The Atlantic-Gulf Case (University of Texas, Bureau of Business Research, Research Monograph No. 16, 1955), p. v.

intermediate ports, and the services between Gulf ports have ceased entirely. In 1938, vessels along the Atlantic coast carried a total of over 6.6 million tons and almost 1/2 million passengers. In 1950 the figures were only 2 million tons of freight and a little over two thousand passengers.³

The strongest segment of post-war operations is between the Gulf and North-Atlantic ports. The distance there is sufficient to permit the coastal carriers full exercise of their lower-than-rail line-haul costs. Most of the shipments are bulk commodities such as oil and petroleum products.

There are several reasons for the decline in the importance of intercoastal and coastwise shipping. During the Second World War, as a result of submarine attacks, government regulations and the requisition of ocean-going vessels, the coastal water transport was drastically reduced, and the traffic has not been able to regain its relative importance since the end of the war. The rate-and service-competition from railroads, road services, and pipelines has also prevented any resurgence of inter-coastal and coastwise shipping of general cargoes.

The United Kingdom. As another great maritime nation and for a long time dependent on her coastwise shipping, the United Kingdom has also experienced an absolute and a relative decline in the importance of her coastwise shipping. Railroads gave coastal shipping its first serious competition, later they were joined by trucking and other road

³Ibid., p. 16.

services, which later have become the most important mode of transportation in that country.

In 1958, road services carried out 45 per cent of the total ton-miles work in the country, railroads carried 35 per cent, and coastwise shipping approximately 20 per cent. The coastwise services loaded only 4 per cent of the total amount of freight that year, but because of the long distances involved its transport work was relatively important.⁴

By the mid 1960's, trucks and other road services were carrying over 60 per cent of the total freight work in ton-miles, railroads had a slight decrease, and coastwise shipping dropped to less than 15 per cent. Most of the coastal traffic consists of coal and oil, and the coal traffic is decreasing while the volume of oil carried is increasing. Generally trucking is taking away freight from both railroads and coastwise shipping, coastwise shipping being the greatest loser, as it can only compete for the long-distance, bulky freight.

Australia. In Australia, where a large portion of the population is concentrated in a small number of cities along the coast, coastwise shipping is an important sector of the transport industry. Since the end of the Second World War the coastwise shipping has undergone considerable change, which has had a marked effect on the role of this type of transportation in its various uses.

There has been a marked decline in the number of passenger journeys made by coastwise shipping, a decline from about 150,000 journeys in 1953 to less than 100,000 journeys some ten years later. The most significant

⁴Ibid., p. vi.

factor in this trend has been the collapse of the interstate passenger trade. The last interstate passenger liner was withdrawn in 1961.⁵

Coastwise shipping has also suffered a rather sharp loss in general cargo. The main reason for the decline has been increased competition from railroad and road services. The increased competition has had several important results. With the loss of much of this freight to the competitors, insufficient cargo has been available to fully employ the general cargo fleet, and shipping companies have been forced to retire a considerable number of uneconomic and over-age conventional cargo vessels.

Because of a great increase in the amount of oil and petroleum products carried by coastal vessels during the last five to ten years, the total amount of bulk cargo has remained fairly stable, showing no absolute decline.

General cargo transported by ship amounted to more than 3.8 million tons in interstate and 500,000 tons in intrastate traffic during the year 1951-52. Ten years later the figures were down to respective 1.6 and 140,000 tons.⁶

New Zealand. Coastwise shipping has always played an important role in New Zealand because of the country's rugged terrain and its division into two main islands. Since the Second World War the country has experienced a rapid industrial and economic growth and a rapid development of its interior transportation network. The total traffic-flow has

⁵G. R. Webb, "The Changing Role of Australian Coastal Shipping," Geography, 48:414, 1963.

⁶Ibid., p. 415.

almost doubled during the last three decades, with railroads and trucking experiencing most of the absolute as well as the relative growth, at the expense of the coastwise shipping services.

In recent years, trucking has been the most effective competitor, although its competitive powers have been somewhat limited by strict government regulations to protect the State-owned railroad. The railroad has been very prosperous, with a total increase of 75 per cent in ton-miles since 1938.

The failure of coastwise shipping to maintain its share of increased trade in New Zealand stems directly from the rise in costs of shipbuilding, repairs, labor, and cargo handling, and the often intolerable delays due to weather and labor disputes on the water-front.⁷

All coastal services considered, coastwise shipping has experienced an absolute increase but a relative decrease. The amount of freight moved by coastal vessels saw only a small absolute increase from the end of the Second World War to 1962-63. The total increase was approximately 15 per cent, while the total freight movement of the country increased by about 75 per cent.

The absolute increase has particularly been recognizable during the last five to six years, the greatest jump coming in the period between 1962 and 1965. The absolute increase of some 40 per cent in those years was mainly due to the new ferry services that were started between the two main islands and an increase in oil and petroleum-products to be shipped after the new oil-refinery was completed at

⁷P. J. Rimmer, "A Resurgence in New Zealand's Coastal Trade," Geography, 51:248, 1966.

Whangarei. In the last few years, since 1965, this trend has tapered off, and coastwise shipping is again experiencing a rather slow absolute increase in transport work.⁸

Justification of the Study

There has been much previous work done in the field of transportation, shipping included. However, little has been written about coastwise shipping, and nothing has yet been done on the coastwise shipping of Norway. Some small studies have been made of local areas within the country, and one study has been made on the economics of scheduled shipping in Norway, but no geographer, or any other person, has attempted to analyse the trends in the coastwise shipping pattern of Norway. The general ideas of what is going on in the transport pattern of the various countries are relatively well known, but there has been little done to show what changes are really taking place, and what factors are causing the various changes.

The period following the Second World War has been selected because it is a period in which Norway has had a relatively rapid industrial and economic growth, and in which there has been a rapid development of overland trade and transportation routes.

Over one-half of the total domestic fleet was lost during the war, and most of the coastwise shipping services were discontinued, and it was not until the early 1950's that the fleet was back to approximately the same size as the pre-war fleet. The majority of the comparisons are over

⁸Ibid.

the period from 1955 to 1965, in which complete statistical information first has been made available.

CHAPTER II

GENERAL CHANGES IN THE COASTWISE TRAFFIC

IN NORWAY

There are several changes that have taken place in the pattern of the coastwise shipping in Norway during the last ten to fifteen years. Although the changes in many cases are not as drastic as in the other maritime nations it seems clear that Norway is following approximately the same trends, especially when it comes to the number of ships in use, the size of the ships, and the amount of freight they can carry.

Usually shipping services have to be streamlined to meet the increasing competition from the faster and more efficient overland transportation. This streamlining usually results in a decreasing number of companies and ships, larger and faster ships on the various routes, and a trend towards more specialized services.

Changes in the Number and Size of the Ships

The long distance coastal services have remained fairly stable since the end of the war. The number of companies has remained between 25 and 30, but the total number of ships has been reduced from 114 in 1955 to 92 in 1965. In spite of the 22 ship reduction, the total number of gross register tons only decreased from 82,395 in 1955 to 72,919 in 1965, (see Table I).

Approximately one-third of the ships in coastal services were combined passenger-general cargo vessels. The trend has been towards a greater percentage of general cargo vessels, as most of the passenger traffic over the longer distances is lost to the competing air services.

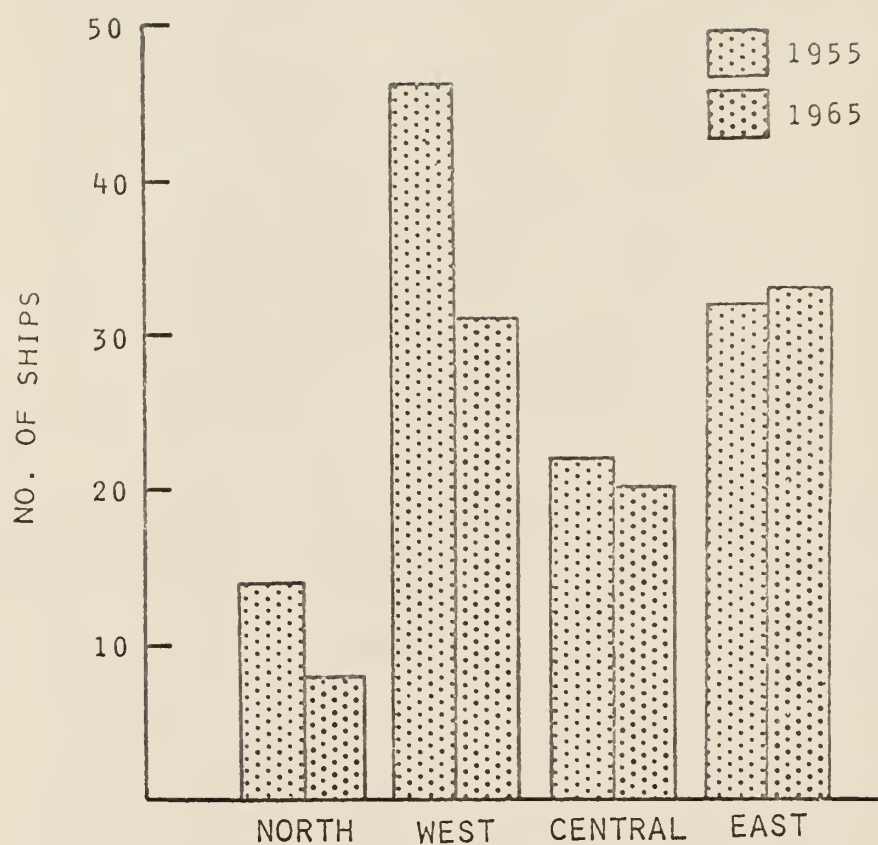


FIGURE 1

CHANGES IN THE COASTAL SHIPPING FLEETS
BY REGIONS

Source: Central Bureau of Statistics, Norway:
Transport and Communication Statis-
tics 1958 and 1965.

Northern Norway (see reference map) is the only region within the country that has experienced an absolute increase in both the number of ships and the total gross tonnage during the ten-year period, the figures being respectively 3 and 16 per cent. The Central region has remained fairly stable, with a drop of only 2 ships and less than 1,000 gross register tons.

Western Norway, with more than one-third of the total number of ships engaged in coastal services, has experienced a 33 per cent decrease in the number of ships, and about a 24 per cent decrease in the total tonnage. The Eastern region, which has close to one-quarter of the total population and most of the industries of the country, has seen the greatest decreases in both the number of ships and in the total tonnage, the respective percentages being 43 and 47.

Much more drastic reductions have been experienced in the various local, short distance, services. Because of the short routes and the heavy concentration of general cargo, these services meet a much stiffer competition from the overland transportation services, and trucking in particular.

A rather unique situation has developed in the Northern region in the period between 1955 and 1965, as the region has experienced a rather substantial increase in the number of vessels engaged in the various local shipping services. At the same time the total gross register tonnage has remained about the same, indicating a trend towards a larger number of smaller ships in the local services. This might be due to the change from relatively large vessels serving long routes with numerous stops to a larger number of smaller vessels serving considerably shorter



FIGURE 2

OLD COASTAL EXPRESS



FIGURE 3

NEW COASTAL EXPRESS

distances and with a much smaller number of stops. However, due to the general lack of statistical information it is impossible to be certain about this.

All the other regions within the country have experienced what might be called normal trends, with decreases in both the number of ships and in the total tonnages, the latter decreasing at a slower rate, thereby giving relatively larger vessels to serve the various routes.

Central Norway has seen a 57 per cent reduction in the number of ships and a 56 per cent reduction in the total tonnage. This was the greatest decrease in the fleet by any region, and resulted largely from the rapid development and improvement of the road system in that region since 1955.

The Western region, with close to one-half of the total number of ships engaged in local shipping services, experienced a decrease of about 10 per cent in the total number of ships, and about an 11 per cent decrease in the total tonnage. The slow rate of reduction is mainly due to the great difficulties of road building in this region, a result of the rather rugged topography and the large number of deep fjords and islands, in many places making it almost impossible to construct any type of efficient overland transportation route.

Eastern Norway also experienced a marked decline in the local shipping fleets. The total number of ships was reduced by approximately 55 per cent and the total tonnage was reduced by about 38 per cent. This region has experienced the greatest over-all improvements in overland transportation routes, and the decrease would surely have been much more significant had it not been for the Oslofjord, which almost divides the

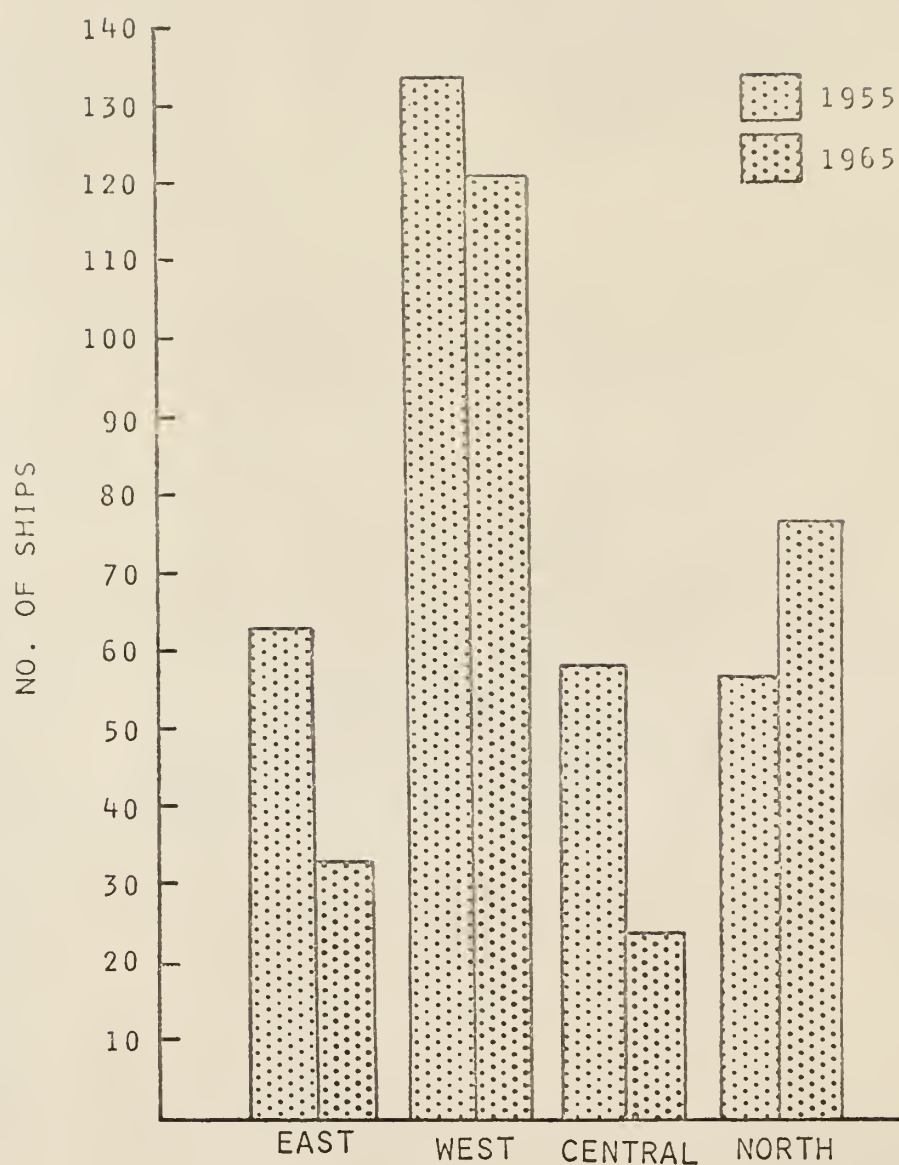


FIGURE 4

CHANGES IN THE LOCAL SHIPPING FLEETS
BY REGIONS

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1958 and 1965.



FIGURE 5

VESSEL



FIGURE 6

NEW LOCAL VESSEL

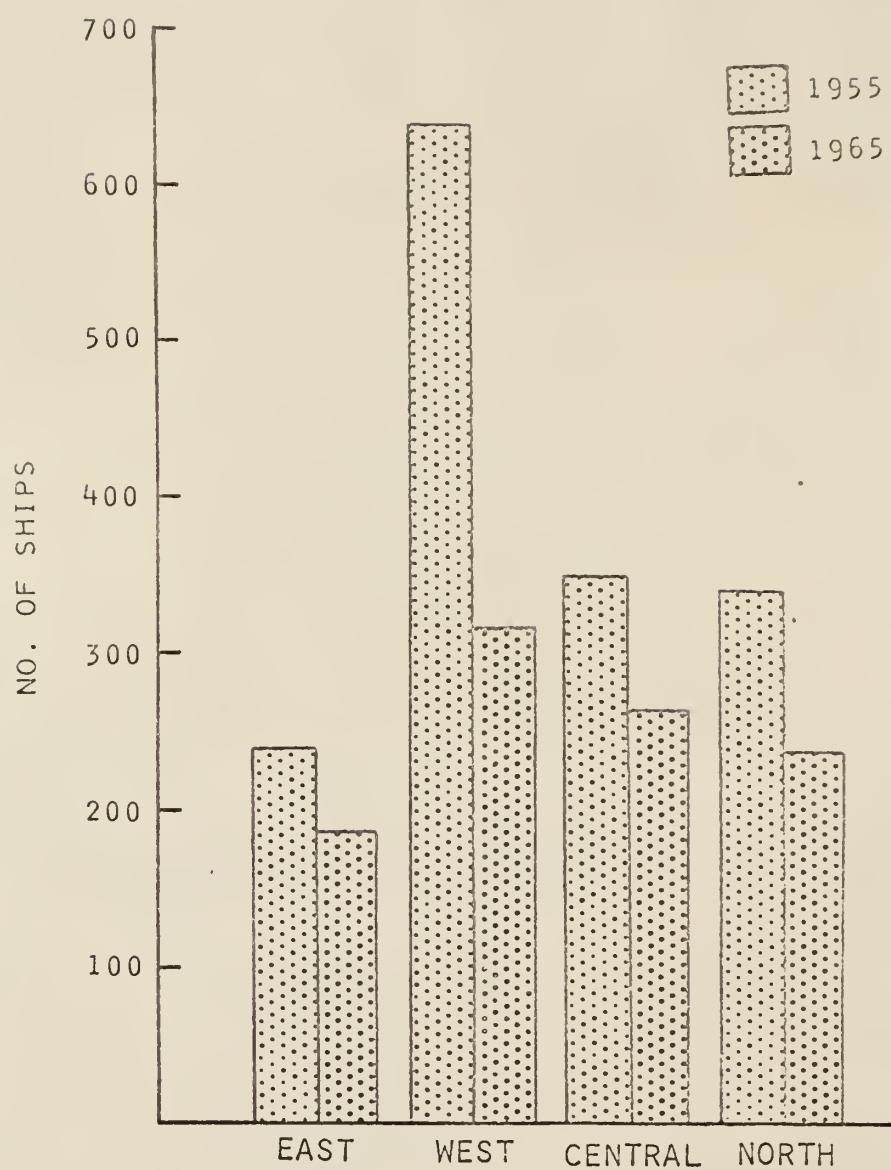


FIGURE 7

CHANGES IN THE TRAMP SHIPPING FLEETS
BY REGIONS

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1958 and 1965.



FIGURE 8

COASTAL TRAMP VESSELS



FIGURE 9

COMBINED FISHING/TRAMP VESSEL

region in two. Due to the large concentrations of population and industries on both the eastern and the western sides of the fjord, the local shipping services are still important as binding the two parts together.

The number of coastal tramp freighters seems to vary from year to year, but the trend has been towards a decline from 1955 on, although somewhat of a peak was reached in 1961. The number of ships engaged in these services has dropped from 1,569 in 1955 to 1,391 in 1961, and 1,000 in 1965, showing a decrease of approximately 30 per cent in the ten-year period. During the same period the total tonnage went down from 126,433 grt. in 1955 to 105,057 grt. in 1965, giving average sizes of approximately 83.6 and 105 gross registered tons.

Tramp vessels are generally special cargo ships or fishing vessels that are used to haul bulk during the off-season. In years with low fish catches, a large number of fishing vessels are usually available for freight movement, and they will compete with the coastwise scheduled services for general cargo. Most often the tramp vessels carry bulk over long distances, and are therefore not often competing with any of the overland transport services.

Changes in the Length of Haul and the Amount of Freight Carried

The average length of haul varies from shipping service to shipping service, and from one part of the country to another. The average length of haul for the tramp freighters decreased from about 550 kilometers in 1955 to about 509 kilometers in 1965. For this particular service the length of haul varies from year to year, depending on the amount of fishing vessels used in the services and also on the amount of general cargo the tramp vessels pick up. The average length of haul has always

been within the range of from 500 to 550 kilometers.

The average for the coastwise services have remained very stable since the end of the Second World War. The average length of haul for the various coastal services has been approximately 475 kilometers, and for the local services it has stayed below the 50 kilometer mark.

Between 1955 and 1965 there were no great changes in the absolute amount of transport-work done by the coastwise shipping services. The scheduled coastwise shipping services experienced a drop of approximately 11 per cent in the amount of general cargo carried as well as in the number of ton-kms. The percentage decline was about the same for both coastal and local services.

The tramp freighters experienced an increase of about 8 per cent in the amount of freight moved, while the number of ton-kms remained about the same as the result of a shorter average length of haul. The tramp freighters carried mostly industrial bulk over long distances and were therefore able to compete more successfully with the railroads and the trucks.

A comparison of the two years, 1955 and 1965, show that the relative importance of the various shipping services declined both in the amount of freight carried and in the total number of ton-kms. In 1955, scheduled coastal services carried about 2.1 per cent of the nations total amount of freight, and about 19 per cent of the ton-kms. In 1965 they carried about 1.8 per cent of the freight, and about 13.5 of the ton-kms. The tramp freighters carried respectively approximately 4.1 per cent and about 43.4 per cent in 1955, and about 3.4 per cent and 34 per cent in 1965.

TABLE I
CHANGES IN FREIGHT TRAFFIC BY MODE OF TRANSPORTATION

Modes of Transportation	Total Freight Transported (1,000 Tons)					Total Freight-Work (Million Ton-Kilometers)				
	1955	%	1965	%	% Change	1955	%	1965	%	% Change
Coastwise Scheduled Shipping	2,323	2.1	2,056	1.8	- 11	1,108	19.4	981	13.4	- 11
Tramp Services	4,459	4.1	4,807	3.4	+ 8	2,441	43.4	2,448	33.9	0
Railroad	5,900	5.4	7,814	4.8	+ 33	1,090	19.2	1,454	20.2	+ 33
Road Services	97,000	88.4	147,900	90.0	+ 52	1,013	18.0	2,363	32.1	+230
Aviation	0	0.0	0	0.0	0	0,003	0.0	0,029	0.0	+970
Total	109,682	100.0	162,577	100.0	+ 48	5,655	100.0	7,275	100.0	+ 28

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics, 1958, 1965
and Coastwise Transport of Goods, 1964-1965. Also: The Economic Commission for Europe: Annual
Bulletin of Transport Statistics for Europe, 1958-65.

Changes in the Pattern of Ownership

In spite of the relatively large number of companies operating the various coastal and local services the trend has definitely been towards a decline in the total number, and a small percentage of the companies have grown very large and are today dominating the domestic shipping market. Prior to the Second World War there were well over one hundred different companies active in the coastwise shipping, and the number remained about the same till the mid 1950's, when the absolute number started to decline. There were 105 companies in the trade in 1955 as compared to only about 70 in 1965.

In 1965, five companies owned a little less than one-half of the total number and 75 per cent of the total tonnage engaged in coastal services, the largest company being Det Bergenske Dampskibsselskab, which alone owned and operated about 21 per cent of the total tonnage. In local shipping there were also five large companies that dominated the market, owning and operating 47 per cent of the total number of ships and about 55 per cent of the total tonnage engaged in local services. The largest company was Fylkesbaatane i Sogn og Fjordane, which owned approximately 10 per cent of the total number of ships and 20 per cent of the total tonnage engaged in local services.⁹

Practically all the coastal shipping companies are privately owned and operated, while more and more of the local shipping companies have come under state and local control and must be regarded as county-companies. The main reason for this trend is the losing battle that many

⁹Bjørn Foss, Rutefartens Økonomi (Oslo: Transportøkonomisk Institutt, 1967), p. 11.

of these companies are fighting against the short-haul competition from overland services, and therefore increased state and county subsidies to keep those services going. The county take-over has been complete in the case of Møre og Romsdal Fylkesbaatar and Troms Fylkes Dampskibsselskab. Most other local companies are also receiving increasingly larger subsidies year by year, and several of the coastal companies are also receiving subsidies.

Over one half of the tramp vessels are owned and operated by private individuals. Only about five per cent of the fleet is owned by companies that are engaged in other shipping services. The remaining part of the fleet is owned by groups of individuals on an equal share basis. There are so many different owners, and the ownership-pattern varies so much from year to year that it has not been possible to study the absolute or relative changes in the ownership-pattern. It would, however, probably be safe to assume that the trend is towards a smaller number of owners, with a few owners getting a larger share of the fleet.

CHAPTER III

CHANGES IN THE ROUTES AND COMMODITIES CARRIED

There have been several changes in the routes of the various scheduled coastwise services since the end of the Second World War, especially within the local shipping services. The changes in commodities carried have been towards a greater percentage of general cargo of the total carried by scheduled services, and more bulky commodities carried by the various tramp vessels.

Changes in Routes: Coastal Shipping

In spite of the many significant changes that have taken place in some of the scheduled shipping services, most of the coastal, long distance services have only experienced relatively minor changes.

The Coastal Express, which services the route between Bergen and Kirkenes, has often been called the backbone of Norway's coastal shipping. It was started in the late nineteenth century and has been growing in importance ever since, particularly up to the early 1940's when most of the fleet was destroyed and the services were discontinued. Since the war, the fleet has been rebuilt, and since the early 1950's the route pattern has been very stable.

There are five companies serving the Coastal Express, and the number of ships on the routes has remained stable at 13 to 14 ships. The only relatively important change in the pattern here has been the addition of an Express route between Bergen and Tromsø during the busy summer months.

In the other combined vessel routes the only changes that have

taken place are that the number of ships has been reduced, and the size of the ships has increased, so the capacity has remained about the same ever since the end of the War. In a few cases, such as on the route between Bergen and Stavanger, the combined passenger/general cargo vessels have largely been replaced by special, high-speed passenger vessels and special general cargo ships, thereby separating the services and making them more efficient and also more competitive.

The greatest changes within the coastwise scheduled shipping pattern have occurred within the freight pattern. On the main routes, between the South and the West and the North, there has been a steady reduction in the number of ships, from 43 in 1955 to 38 in 1965. The older ships have also been exchanged with new, special cargo ships, and the capacity has remained about steady. Several of the smaller, unimportant ports have been cut from the schedules, and the number of sailings have also in several cases been reduced. The majority of the general cargo ships have weekly and bi-weekly sailings, but because of the relatively large number of ships engaged on these routes, most of the larger ports have daily visits.

Because of the long routes, and the general lack of good, competitive overland transportation routes, these services are still very attractive, and are not losing much freight movement. Some of the competition from trucking and railroads was eliminated when the number of ports of call was reduced, making the average hauls longer, and thereby outside of the competitive reach of these services. The regularity of the services, with daily calls in all the larger ports, and the introduction of new pallet ships during the last few years have especially made these services attractive.

The 9 per cent increase in tons transported, from 1955 to 1965 should be a fairly good indication of the routes' competitive possibilities. As long as these routes are modernized, and the ships concentrate on long-distance movement of general cargo, the services will undoubtedly remain competitive.

In recent years the number of routes between Central and Northern Norway has also increased, and this is mainly due to the relatively rapid economic growth of parts of Northern Norway, thereby increasing the number of commodities to be carried back and forth between the two regions. The Central region also contributes an increasing quantity of freight that has come by the railroad from the Eastern region of the country.

The introduction of new routes and ships between the Central and Northern regions is a good indication of the increase in traffic between the two regions. Right after the Second World War most of the traffic was northbound from Trondheim to Northern Norway. Since the end of the war, Northern Norway has experienced a relatively rapid industrial and economic growth, and the traffic flow is fairly heavy from the North to the Central region. Central Norway has also seen a relatively rapid economic growth, and today an increasing amount of traffic is going between Northern Norway and Central ports south of Trondheim.

Routes between Trondheim and Kirkenes have not experienced any increase in traffic since 1955, and this is mainly due to the increasing competition from the railroad, which was completed to Bodø in the late 1950's. An increasing amount of general cargo now goes by rail directly from Trondheim to Bodø or ports south of Bodø. An increasing amount of freight is also sent by rail to Bodø where it is loaded onboard coastal

vessels to be taken to the ports north of Bodø. It has been estimated that the annual increases in general cargo moved between Trondheim and Bodø have for the most parts been taken by the direct rail services, which offer faster and more efficient services.

The increases in freight traffic have been between Northern Norway and ports in Central Norway that are located south of Trondheim. These ports have no rail-connections with Trondheim, and the great majority of the commodities is therefore sent to the North by ships, which still is the cheapest service by far. On these routes the railroads would not be competitive since goods would have to be transferred from ship to rail in Trondheim, and then from rail to ship again in Bodø. Such transshipments make the transport slower, and also much more expensive.

Within Northern Norway there are two relatively important routes that have been expanded since the War. The Finnmark Fylkesrederi's North Cape Route carries passengers and freight between Bodø and Kjøllefjord, with weekly trips in either direction. This route carries particularly large amounts of fish on its south-bound trips and general cargo on the north-bound trips. The other route, between Tromsø and Svalbard (Spitzbergen), has become more and more important, although it only operates in the months from June to September. The route carries general cargo and mail and passengers to Spitzbergen, and mainly mail and passengers on the way back. This route has become quite popular among tourists, and the ship that makes the trip is over twice as large today as it was a few years ago.

The only freight movement of any significance between Spitzbergen and Northern Norway is the movement of coal from the mines in Spitzbergen

to various ports in Northern Norway. The output of coal has, however, remained about the same since the end of the war, and there has therefore not been any significant changes in these transport routes. Similar to the combined passenger/general cargo services, these services are also limited to traffic during the summer months, since the ice situation is very difficult during the Winter months.

General cargo routes between Bergen and Oslo have been extended, and have experienced a total increase of some 50 per cent in the amount of freight moved between 1955 and 1965. Since Oslo and Bergen are the two largest cities in Norway, and also have the great majority of industries in and around them, it is only natural that the flow of traffic between the two areas should be great. There is also only limited competition from overland transportation. The rail line is only single track, and the roads are rather narrow and in poor condition most of the way, thereby making these services relatively unimportant as competitors. Most of the general cargo movement is also long-haul movement on this stretch, thereby making the coastal shipping services by far the most efficient. Without great improvements and modernization of the railroad between the two areas, and without major road improvements, the coastal shipping will remain the number one mover of general cargo for many years to come. General cargo will also remain mostly long-distance movement, since there are no population centers to speak of between the two areas over land, thereby creating no intervening opportunities.

In coastal, scheduled freight services, the Oslofjord region has experienced the most drastic changes. Before the outbreak of the Second World War and during the first few years following the war, this region,

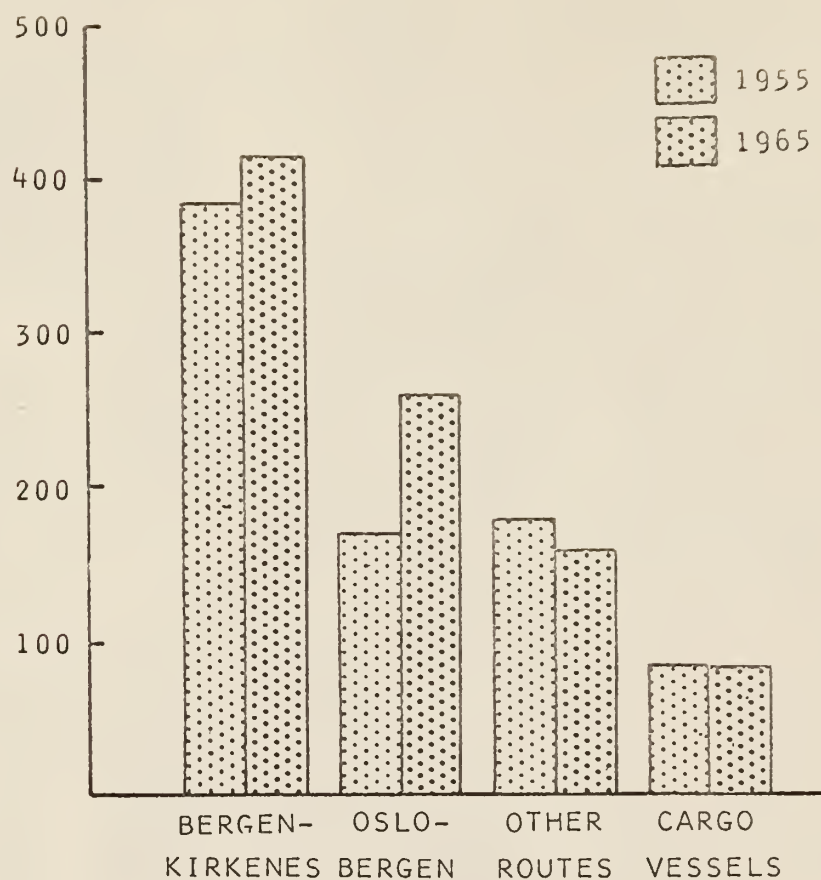


FIGURE 10

THOUSANDS OF TONS OF FREIGHT TRANSPORTED BY
COASTAL SHIPPING SERVICES ON MAJOR ROUTES

Source: Central Bureau of Statistics, Norway:
Transport and Communication Statistics
1958 and 1965.

which has almost one quarter of the population and the majority of the industrial installations of the country, had a large number of transports by coastal shipping. Today, however, the fleet is reduced to next to nothing. All the combined passenger/freight services have ceased, and the routes are now served by high speed passenger vessels and only two cargo vessels.

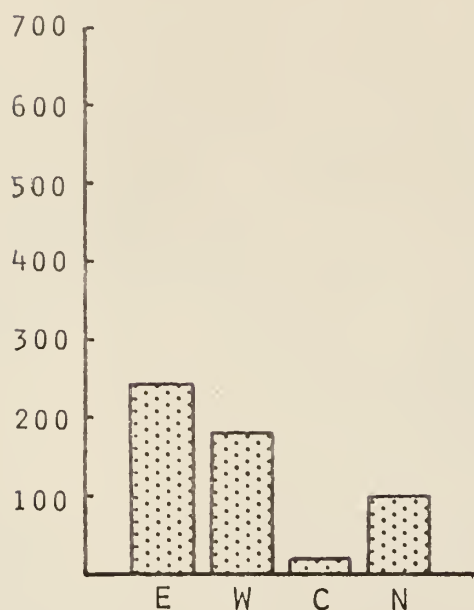
The two cargo services remaining comprise two pallet ships that compete directly with trucks and railroads. The routes are served by A/S Trafikk, Fredrikstad on the east coast of the Oslofjord, and Nils Halvorsen A/S Porsgrunn on the west coast of the fjord.¹⁰

It is hard to guess when the two major, remaining coastal shipping services in the Oslofiord area will cease operations, but it should not be long. Eastern Norway has most of the population, most of the industries, most of the relatively gentle topography, and the most of the hard-surface highways in Norway. All these factors, including the relatively short distances involved, have given trucking a great edge in this region, and coastal shipping has rapidly vanished in the entire Oslofiord area.

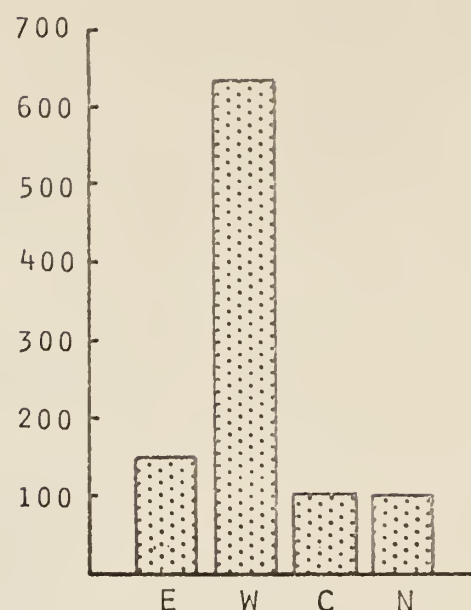
In the Southern part of the region, where the distances between the population centers are longer, and the topography is more rugged, coastal shipping is still of relative importance in the movement of general cargo. Roads are, however, being improved year by year, and trucking is taking over more and more of the freight movement.

¹⁰Bjørn Foss, Rutefartens Økonomi (Oslo: Transportøkonomisk Institutt, 1967), p. 6.

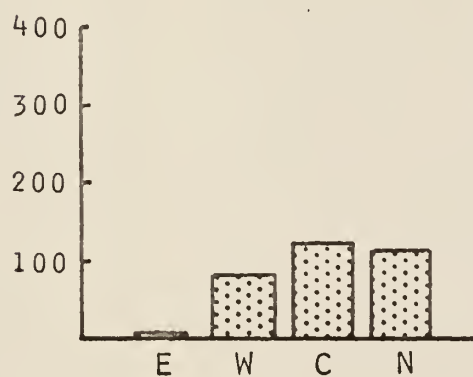
FROM EAST TO:



FROM WEST TO:



FROM CENTRAL TO:



FROM NORTH TO:

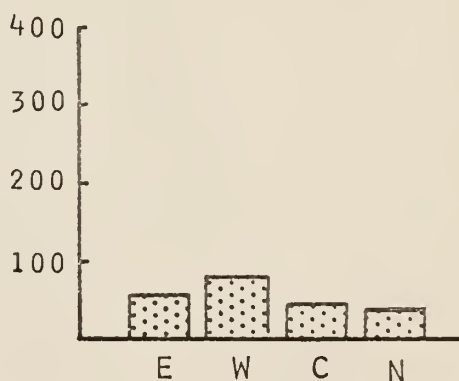


FIGURE 11

THOUSANDS OF TONS OF FREIGHT TRANSPORTED BY SCHEDULED
COASTWISE SERVICES BETWEEN THE REGIONS-1964

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1965 and Coastwise Transport of Goods 1964-1965.

Changes in Routes: Local Shipping

Of the various scheduled shipping services, local shipping has seen the greatest changes of route pattern. Right after the Second World War most of the local routes were serviced by old and relatively small vessels, and the routes were more or less typical "milk-runs", where the vessels made frequent stops along the route. The vessels mainly served to tie the urban centers and the small local communities together, and they carried passengers, mail, general cargo, and in many cases, agricultural commodities from the farm areas into the urban centers.

Since the end of the War, most of the farm communities and urban centers along the coast have been tied together by roads, and much of the short distance, low weight commodities, as well as much of the passenger movement, was taken over by the different scheduled road services. This competition made many of the local shipping services uneconomical, and changes had to be made to keep the local shipping operations going.

Since 1955, most of the shipping companies have rebuilt their fleets, and the ships are today generally much faster and larger than they were immediately after the end of the War. The routes have generally been made longer, but the number of stops has been greatly reduced, so the total time of travel from one place to another has been reduced. The vessels are still primarily tying the urban centers together with the outlying rural communities, but the rural communities served are usually the regional centers, having considerable hinterlands, that today are serviced by road services rather than the same local shipping services.

Although there are no official statistics available for the individual routes by county, it will be interesting to see what changes have

taken place in one specific county, Møre og Romsdal, a county that is fairly typical of the local services in Norway.

In Møre og Romsdal, the traffic increased rapidly right after the end of the Second World War, and the volume of goods handled reached its peak in 1957. Since then Møre og Romsdal Fylkesbaatar (county shipping company) experienced a steady decline in both the volume of goods and the number of passengers moved. Although the company renewed its fleet, utilizing modern, up-to-date vessels, its traffic continued to decline, and in the relatively short period from 1954 to 1962, 16 routes had to be withdrawn. In 1961, its two large routes, Alesund-Andalsnes and Kristiansund-Trondheim also had to be suspended. Due to the declining amount of traffic on the various routes, the company's operating deficit has risen sharply, and greater and greater subsidies have to be received annually from the county and the national government.¹¹

These trends, towards a reduction in the total number of ships and routes, and an increasingly greater percentage of subsidized routes, are typical of the Central region and most of the Eastern region of the country.

Møre og Romsdal, as well as the rest of Central Norway, has had great improvements in the road system, and a great number of ferry services have been introduced since the end of the Second World War. Many of the local shipping companies are operating the road/ferry services, and the income from these overland routes often make up for much of the losses within the local shipping services.

¹¹Margaret C. Gilpin, "Møre and Romsdal, Norway: A Study of Changes in the Rural Transport System of a Coastal Area," Geography, 53:146, 1968.

The local shipping services are mainly moving general cargo, and because of the great reductions in distance by overland routes, the road/ferry services have become increasingly important, and several of the local shipping services have had to shut down. Over shorter distances the road services offer faster and more efficient services; particularly the door-to-door services are very attractive.

In the Eastern region there has apparently been a great increase in the total amount of freight moved by the local shipping services. The increase is, however, rather insignificant when one considers the relative insignificance of local shipping in the total traffic movement in this region. With the great majority of the population and industries in the country, and the greatest movement of freight within any region of the country by far, local shipping services only carry about 11 per cent of the total local freight moved by ships, and the total is less than one-fifth of the total amount moved by local shipping services in the Western region.

The increase in the total amount of freight moved by these services is largely due to the increase in the southern part of the region, where the distances are relatively long between the various population centers, and the topography is relatively rugged, thereby making the local shipping services fairly competitive.

The Oslofjord area has had a relative decrease in the importance of local shipping services when it comes to freight.

Considering the total freight movement in the Oslofjord area, the local shipping services have experienced a relative decrease in importance. This area of the country has the largest concentration of population and

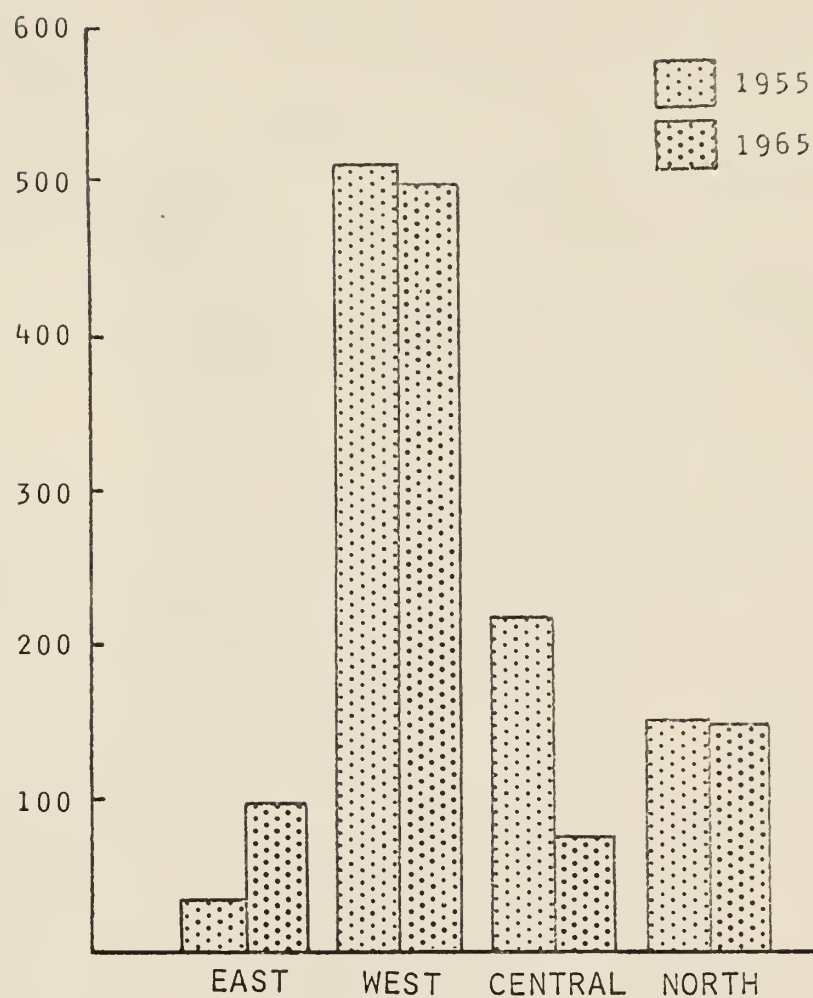


FIGURE 12

THOUSANDS OF TONS OF FREIGHT TRANSPORTED
BY LOCAL SHIPPING SERVICES
WITHIN THE REGIONS

Source: Central Bureau of Statistics, Norway:
Transport and Communication Statistics
1958 and 1965.

industries as well as the most gentle topography and the best developed road system, thereby making the road services very competitive. Most of the remaining freight movement by local shipping services is across the Oslofjord, but even this freight movement is being taken over by the road services, particularly since the ferry services across the fjord were extended after the war.

The road/ferry services are much more efficient, and much cheaper than most of the local shipping services are, particularly if the goods is to be moved to some area away from the port itself. The trucks, and other road services, can make door-to-door services, and do not have to unload and load at the two ends of the fjord, as the trucks drive on and off the ferries by their own power.

Road/ferry services have also seen a great increase in importance in the Western and Northern regions, but because of the relatively sparse population distributions and long distances the local shipping services are still relatively important in the total transport picture. In the two regions there has generally been an increase in the total movement of freight over long distances, while there has been a relatively sharp decline in the movement of freight over shorter distances, particularly in and around the major population centers.

The increases in freight movement over the relatively long distances have generally been due to the increasing interaction between the most populous areas, or centers, within each county. The distances between these areas are generally fairly long, and the overland transportation routes are so poorly developed that the local shipping services still are the most rapid and efficient service available.

Characteristic of the local shipping services is that they go in a radial pattern from a focal point, usually the largest urban center, or centers, in a county, and most of the traffic is directly to or from that particular center. For example, on the local routes going out from Bodø, 80 per cent of the total traffic is between Bodø and the areas immediately surrounding the city. The farther away from the city you go the smaller the amount of traffic is, and the result is that most of the routes are economically inefficient, since the capacity only is utilized on a very short distance of the total route.¹²

Around the major population centers, the roads are usually of relatively high quality, and since the hinterlands are generally small the local shipping services are no longer competitive on these short routes, and this is where the services have lost most of the increasing amount of traffic to the road services. The result therefore has often been the reduction of the number of ports of call, thereby leaving most of the short hauls in-between the major ports to the road services, which in many cases are owned and operated by the very same shipping companies.

Because of the rather poor overland transportation services in many of the coastal areas, the local shipping services have to maintain their routes whether they are economical or not. All the companies have service obligations within their regions, usually a county, and cannot discontinue services on any routes without the consent of the Department of Transportation and Communications (Samferdselsdepartementet). The result is that all companies have some uneconomical routes, and they all

¹²Bjørn Foss, Rutefartens Økonomi (Oslo: Transportøkonomisk Institutt, 1967), p. 7.

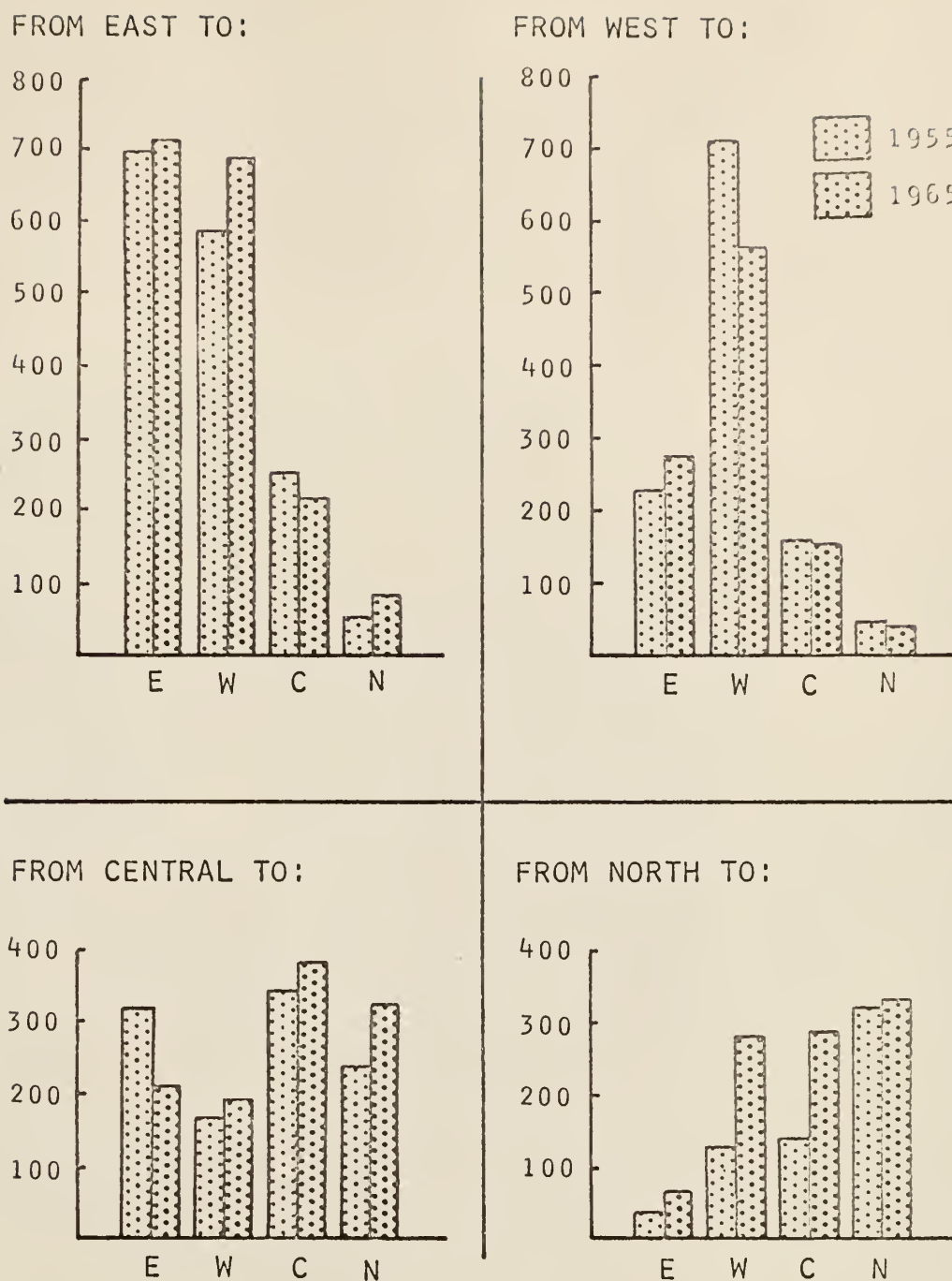


FIGURE 13

THOUSANDS OF TONS OF FREIGHT TRANSPORTED BY TRAMP SHIPPING SERVICES BETWEEN THE REGIONS

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1958 and 1965 and Coastwise Transport of Goods 1964-1965.

have operational deficits that are increasing from year to year, and the county and State subsidies are therefore also increasing.

The tramp services have no specific routes, but are generally following the same pattern year after year, carrying raw materials to the various industries. The changes in freight movement between the various regions have been relatively minor, and because of fluctuations from year to year, it is hard to say what specific changes are taking place.

Changes in the Commodities Carried

There are very few statistics available, showing the types of commodities carried by the different scheduled coastal and local shipping services, so it is therefore hard to make any specific statements about the over-all changes that might have taken place. The Coastal Express, between Bergen and Kirkenes, is the most important service as far as the combined passenger/general cargo vessels go, and it should therefore be fairly safe to assume that it is fairly representative of all the services within the country.

The Coastal Express carries mostly general cargo and fresh fish, and since the end of the War, the trend has been towards more and more general cargo. There has been a fairly sharp increase in the total amount of general cargo carried, with a 49 per cent increase in the north-bound traffic, and a 414 per cent increase in the south-bound traffic. The great increase in the amount of south-bound cargo is due to the increasing economic growth of the earlier underdeveloped North. The northern part of the country was also totally dependent on food and other commodities from the south in the first decade after the war, due to the extensive rebuilding programs necessary, and the majority of the cargo

therefore was northbound during the first half of the 1950's.

The amount of fresh fish carried has varied greatly from year to year, and the 5 per cent decrease from 1955 to 1965 is not very significant; the figure may jump up to another high again the following year. The amount transported is all southbound and depends on the kind of catch the fishing fleet has had in Northern Norway. The trend, however, has clearly been towards a decline in the percentage of the total amount of fish carried by the scheduled coastal services.

Most of the fish today is carried by special factory and freezer ships, and due to the greater number of new fish processing plants in Northern Norway, more and more fish is now being processed within the Northern region, and is now sent southward as general cargo, thereby helping to increase the relative importance of general cargo moved annually. The total amount of mail carried, in cubic meters, increased every year up to 1955, showing an increase of about 42 per cent only between 1950 and 1955, but then remained about stable from 1955 to 1960, showing only a small decrease, but for 1965 no statistics are given.

The missing information about the movement of mail by the Coastal Express in 1965 is no doubt due to the almost complete transfer of mail from the coastal shipping services to the domestic air services. In 1955 there were only a few minor routes between Northern Norway and the rest of the country, Bardufoss and Bodø being the only places with regular services. By 1965 the routes had been extended all the way to Kirkenes, with regular services several daily between the largest cities in the region and the major population centers in the other regions. The Coastal shipping services thereby became rather inefficient in comparison,

TABLE II
COASTAL EXPRESS: CHANGES IN TRAFFIC OF TOP COMMODITIES

Commodity	Direction	1950	1955	1960	1965	% Change 1950-65
General Cargo (tons)	North	46,631	45,613	52,613	69,629	+ 49
	South	6,181	9,872	13,950	25,507	+414
Fresh Fish (tons)	North	----	----	----	----	---
	South	43,711	41,060	49,487	41,404	- 5
Mail (cu. meters)	North	25,485	37,339	37,112	n.a.	(+ 47)*
	South	----	----	----	----	---

*1950-60.

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics, 1958, 1960, and 1965.

TABLE III

COASTAL AND LOCAL SHIPPING SERVICES: BREAK-DOWN OF THE
VARIOUS COMMODITIES TRANSPORTED - 1964

Commodity	Tons Carried	% of Total
Various Foods	14,682	13.5
Iron and Metal Commodities	11,936	11.0
Animal - Feed	9,122	8.3
Chemicals	6,109	5.7
Flour and Grains	6,050	5.6
Paper	5,294	4.8
Fruit, Vegetables and Potatoes	5,217	4.7
Cement, Chalk, Glass etc.	4,447	4.1
Fish	4,404	4.0
Top - 10 Commodities	67,282	61.7
Total - All Commodities Carried	109,102	100.0

Source: Central Bureau of Statistics, Norway: Coastwise Transport of Goods 1964-1965.



FIGURE 14

COASTAL GENERAL CARGO VESSEL



FIGURE 15

HANDLING OF GENERAL CARGO

and are today only of secondary importance in the national mail movement.

Similarly to the coastal shipping services, there are very few statistics available regarding the various types of commodities moved by the local shipping services. It should, however, be fairly safe to assume that the trends have been similar to those experienced by the coastal shipping services. Due to the greater number of smaller industries throughout the country, the general trend is towards an increasingly greater share of general cargo in the total transport picture, while the amount of bulk commodities is decreasing in relative importance. Since the great majority of the local vessels are combined passenger/cargo ships, and the size of the ships is relatively small, the vessels are not equipped to move bulk commodities efficiently, and the services are therefore concentrating on the movement of general cargo.

There have been some significant changes in the types and amounts of commodities carried by the various tramp vessels along the coast. The tramp vessels follow no set routes, and it is therefore hard to analyse any changes in their trip-patterns, but because of better statistical surveys from 1955 on, it has been possible to get an idea about the various commodities the vessels carry, and see how the stress has been moved from one kind of bulk to another.

The tramp vessels have always had an emphasis on high-density, low-value commodities, mostly being industrial bulk. According to the statistical surveys, rock, gravel, hay, and iron and steel showed relatively significant increases in the ten year period from 1955 to 1965, especially the amount of gravel and macadam became of great importance in 1965, accounting for 17 per cent of the total tonnage moved. Sand was a

clear second, showing about a 200 per cent increase from 1955.

The decrease was greatest in the amount of fish moved, and this seems to be typical of most shipping services. Other commodities that experienced relatively large declines were wood and wood products, cement, fertilizers, and rocks of various types.

In 1955, the top-three commodities, cement, fish, and fertilizers, accounted for 31.6 per cent of the total, and only 17.5 per cent of the total in 1965, while gravel and sand, the top-two commodities in 1965 accounted for 31.8 per cent in that same year, as compared to only 9.1 per cent in 1955.

Because of the irregularity of the tramp services they do not attract much general cargo, and the great majority of the movement is of industrial bulk. General cargo accounted for approximately 4 per cent of the total amount of freight in 1955, and only about 2 per cent ten years later. It therefore seems that the amount of general cargo is becoming less and less significant in the total freight picture, and most of it is now carried by the coastal scheduled services, and, of course, the over-land transportation services.

Changes in the Length of Haul

Because of the few alterations of routes and commodities carried, also the lengths of haul have remained fairly stable within the scheduled coastwise services. No official figures have been given for all combined passenger/general cargo and scheduled freight vessels, so an average of 477 km. has been used for the years between 1955 and 1965. The Coastal Express, in the same ten-year period, only experienced a change of less than 10 km., so it should be fairly safe to presume that there has only

TABLE IV
TRAMP VESSELS: CHANGES IN THE TYPES OF COMMODITIES CARRIED
(1,000 tons)

Commodity Carried	1955	% of Total	1965	% of Total	% Change
Gravel and Macadam	74	1.6	848	17.7	1146
Sand	335	7.5	676	14.1	200
Cement	549	12.2	440	9.1	- 20
Fertilizers	353	7.9	267	5.5	- 25
Calcite and Dolomite	327	7.4	238	5.0	- 28
Feed Stuff	135	3.0	234	4.9	73
Iron and Steel	81	1.8	187	3.9	230
Quartz	136	3.0	159	3.3	17
Wood Products	313	7.0	151	3.2	54
Fish	512	11.6	139	2.9	- 73
Top - 10 Commodities	2,815	63.0	3,339	69.6	12
Total - All Commodities	4,459	100.0	4,807	100.0	8

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics, 1958 and Coastwise Transport of Goods 1964-1965.

been minor changes, if any, in the other scheduled services as well.

In the tramp trade there seems to have been so many fluctuations from year to year that it is difficult to point out distinct trends. The length of haul reached an average high of 550 km. in 1961, after being 547 km. in 1955. Then, in 1965, the average length of haul was all the way down to 509 km.

No major changes in the average length of haul could be expected within the various scheduled shipping services. The Coastal Express, as well as most other coastal shipping services have remained about the same during the last ten to fifteen years. As long as there are no major changes in the routes and the number of ships on the different routes one cannot expect any great changes in the average length of haul.

The scheduled local shipping services have seen much more significant route-changes, but the various routes are still operating out of the same places as they were right after the end of the war, and are still serving essentially the same areas and places as before, and no great changes in the average length of haul is therefore to be expected.

There is a much greater distribution of industries throughout the country today than there was right after the end of the war. This change has mainly had a relatively great affect on some of the tramp services. As the distances from the raw material producing areas to the manufacturing and processing areas, the raw materials have to be moved over shorter distances, and since the tramp vessels primarily are occupied with the movement of bulk commodities, the average length of haul of these commodities has seen a general decline since 1955.

CHAPTER IV

DIFFERENT FACTORS THAT HAVE INFLUENCED THE COASTWISE TRANSPORTATION PATTERN

The Affects of the Extractive Industries' Locations

The relatively rapid industrialization and economic growth in Norway since the end of the Second World War has had a great impact on the coastwise shipping as well as all the other media of transportation.

Coastal and local scheduled shipping services have seen little of the effects of new industries and industrial sites, mainly because they generally concentrate on carrying passengers and general cargo. The rapid development of Northern Norway can, however, clearly be seen in the transport pattern of general cargo on the Coastal Express. During the first ten years following the end of the war, the great majority of general cargo was northbound, most of it being supplies for the areas that had to start from scratch following the total burning and destruction of several towns and villages when the Germans withdrew in 1945.

In the middle 1950's the North regained much of its strength, and industries were producing, and soon the flow of commodities towards the south resumed, particularly commodities related to the fishing and hunting industries of the North. Since 1955 the amount of southbound freight has increased at a much more rapid rate than prior to that year, and although the ratio of north-bound cargo to south-bound cargo still is 2:1, the gap is narrowing year by year.

Similar trends can also be seen in other scheduled coastal services, with a greater emphasis on south-bound commodities. Since the

local services mainly are restricted to the individual counties and are centered on one or two urban centers within that county, no such trends are to be seen in those services.

Most of the southbound movement of freight by the scheduled coastal shipping services has traditionally been fresh fish. In 1950, fresh fish accounted for close to 85 per cent of the total southbound freight movement. In 1955, the percentage was well over 80 per cent, but by 1965 it had been reduced to approximately 60 per cent.

This reduction in the relative importance of fresh fish on the southbound routes does not mean that Northern Norway is sending less fish to the Southern parts of the country; the amount is increasing annually. The change that is taking place is that the Northern region has developed a great fish processing industry of its own since the war, and a greater share of the fish catch is now processed within the region, and an increasingly greater share of the fish moves southward as general cargo.

The trend towards more general cargo has also resulted in a relative decline in the amounts of fish moved by the tramp vessels, and overland transportation has also become more competitive, particularly for the short and medium length hauls.

Since the air routes were extended to the Northern region as far east as Kirkenes in 1964, the air services have become increasingly important freight movers. Particularly the direct services from Bodø and Tromsø to Oslo have taken over an increasingly greater share of the movement of fresh fish on the southbound trips, and some vegetables, berries and fruit on the northbound trips.

The movement of fresh fish from Bodø and Tromsø was started a

couple of years ago on the direct night routes. In the two-month trial period about 35,000 kg (80,000 pounds) of fresh fish was moved, and the traffic has increased ever since. The fish movement on these routes is so important today, that the routes are often referred to as the "Cod-fish runs", and freight revenue derived from the shipping of fish has by far passed the passenger revenue earned between these cities.¹³

S.A.S. (Scandinavian Airlines System) is counting on a great increase in the freight movement by air services between the Northern and the Eastern part of Norway. The company has ordered two DC-9 freight aircraft for delivery next year, and an additional two orders are expected soon. The main routes will be between the Oslo area and the Northern region, and the most important commodities in these freight runs will be fresh fish and various agricultural commodities. The 15 ton capacity aircraft are also expected to be able to compete for considerable amounts of high-value, low-weight manufactured goods.¹⁴

The fresh fish and fish products, as well as the fruit, berries and vegetables, flown between the Northern and Eastern regions are relatively expensive as compared to the average price of the same commodities, frozen, that are transported by ships. In spite of the higher costs, the fresher products are much more popular, and this is a fairly good example of where personal taste is of greater importance than freight rates.

Similar trends can be observed in the movement of fish by tramp

¹³News item in the Norway Digest, January 8, 1969.

¹⁴News item in Tromsø, January 7, 1969.

vessels. Most of the fish was, in 1955, loaded in the counties of Sogn og Fjordane, Møre og Romsdal, and in Finnmark, and was unloaded in the counties of Rogaland, Møre og Romsdal, and Bergen, where a large number of fish processing plants were located and also a great share of the fish was consumed, or re-distributed. Since 1955, several fish-processing plants and packing factories have sprung up in Troms and Finnmark, and a greater share of the fish is now loaded in those counties. More and more fish is also carried by special freezer equipped ships, carrying fresh fish for the daily consumption in the larger cities of southern Norway, and most of the general cargo resulting from the increasing fish-processing in the Northern region is being taken over by the various scheduled shipping services. The total amount of fish carried by tramp vessels in 1955 was 512,000 tons, in 1965 the amount was only 139,000 tons, which clearly indicates the above mentioned trends.

A great percentage of the goods moved by the various scheduled coastwise services is related to the agricultural production of the country. The items such as various foods, animal feed, flour and grains, and fruit, vegetables and potatoes account for about 42 per cent of the total tonnage moved by these services in 1964.¹⁵

The great movements of agricultural commodities within the country are largely due to the general lack of good, productive agricultural land in most of Norway. The three important producing areas are around Oslo, Stavanger, and Trondheim, and most of the domestic exports are from these three areas. Oslo is the great market for most of the production of the

¹⁵Coastwise Transport of Goods 1964-1965 (Norges Offisielle Statistikk A 181. Oslo: Central Bureau of Statistics of Norway, 1966), p. 50.

Eastern and Western regions, while the Central region supports the Northern region, and large parts of the Western region.

There have been no changes in the general distribution of agricultural land in Norway since the Second World War, and the rates of production have grown at approximately the same rate in the three major producing areas, thereby giving no significant changes in the general transport pattern. The only routes that have experienced some competition from the railroads have been the routes between Bergen and Oslo, and between Trondheim and Bodø, particularly the latter one after the completion of the route in the late 1950's. In the last couple of years there has also been some competition from the domestic air services, but as of yet these changes have been so small that they have not changed the transport pattern of the coastwise shipping services.

There have been several changes in the location of the new sawmills and wood processing plants. Right after the Second World War, most of the plants were located in the Eastern and Central regions. Since the war, an increasingly larger number of plants has been developed in the Western region, and a few small plants have also been constructed in the North. Due to the increasing number of plants throughout the country, the average distance from cutting area to processing plant has been reduced, and the average length of haul has therefore been reduced. This has resulted in some route changes, but basically the pattern is the same as it was before. Some of the shorter hauls have been taken over by trucks, particularly in the East and in the Central regions.

The Western and Central regions have lately also become important manufacturers of furniture, and an increasing amount of these finished

products is sent to the major market areas, especially the Oslofjord area. Much of the furniture is moved by the coastal freight services, and some is going by railroads to Oslo, the tramps therefore have only a very small share of this movement. This type of increasing production in the Western region is the main reason for the great increase in the amount of general cargo carried by the scheduled coastal services from the West to the East since 1955.

A large percentage of the calcite and dolomite are loaded in the great quarrying areas of Møre og Romsdal to the cement plants in the South and the East. An increasing percentage of these raw materials also go to the various smelters and wood-processing plants in Østfold and Oslo.

A larger number of smelters and wood-processing plants in the Eastern and Western regions has resulted in shorter distances of freight hauls, particularly the hauls of raw materials for the industries. Calcite and dolomite are used in these types of industries, and much of it comes from the Central region. Right after the war the bulk of this freight was moved to the Eastern region, where most of the industries were located. With the increase in the number of such industries in Western Norway, the long distance movements have become somewhat less important, and the average length of haul has been reduced.

The changes in industrial location have in these cases not caused much changes in the relative importance of the coastal shipping services in the movement of the raw materials and finished goods. Between Central and Eastern Norway, where most of this movement occurs, there are no good and efficient overland transportation facilities to compete with the shipping services, and the shipping services, in this case the tramp

vessels, still carry most of the commodities.

The Affects of the Manufacturing Industries' Locations

It is interesting to note that the greatest changes in industrial location and development of new industries following the war have had little or no affects on the total coastwise transport pattern.

While there have been increases in the basic industries, such as textile, wood processing, food processing, and the manufacturing of glass and stone products, the great increases in industrial development have been within the electro-chemical and electro-metallurgical industries. A few of these industries were in existence prior to the war, but it was not until the 1950's that most of these industries were developed. Most of the industries were constructed on the southern and western coasts of Norway, and one should expect that the amounts of freight in these areas, particularly bulk freight should show a significant increase.

No great increases have been experienced, however, and this is due to the independence of most of these industries. They are located where they are to take advantage of the abundance of cheap hydro-electric power and the direct access to cheap water transportation. The industries are basically using raw materials that are imported directly from foreign areas to the different plants, and most of the finished products are exported directly from the plants as well, thereby making the industries almost totally independent of the domestic transportation network of Norway.

Only relatively small amounts of the finished products are used domestically, and the majority of these are going to the Oslo area, thereby helping to increase the general flow of general cargo between the

West and the East. This rather unique situation has, however, resulted in a great change in industrial locations and developments within the country with little or no effect on the domestic coastwise transportation network.

In 1955, the greatest movement of bulk by shipping services was within the Western region of the country, followed closely by the traffic between various Eastern ports and the traffic between the East and the West. Transports within the Central and Northern regions of the country only amounted to approximately one-half of the traffic between the previously mentioned areas, and the absolutely most insignificant transports were the ones between the East and the North, the West and the North, and the North and the East.

By 1965 the transport pattern had changed somewhat, and this is mainly believed to be due to industrial relocations, and the industrial growth of previously predominantly rural areas. Now, the two heaviest transport routes were from the East, to other ports in the East and to the West. Transports within the West had dropped to third place, and great increases were experienced on the routes from the Central region to the North, and particularly on the routes between the North and the West and Central regions. This picture again tends to show that Northern Norway is growing in importance as an industrial region of the country, and it also establishes the fact that the Oslofjord region is growing bigger and bigger, and that more and more of the bulk commodities are being moved within that region as well as between it and the neighbor regions.

By regions, the weight of the commodities also seem to decrease with increasing distance from the East. The counties of the Eastern

region handle mostly industrial bulk, while on the West coast, general cargo makes up some 25 per cent of the total freight carried, and in the North general cargo is of primary importance, giving an indication of where the heavy and relatively light industries are located within the country.

By and large, the results of the industrial developments and relocations following the war only seem to have resulted in the changes of much of the general cargo that was carried by the tramp vessels over to the scheduled coastal shipping services, and that the routes between the southern part and the northern part of Norway are becoming increasingly important. Due to the increasing number of industries throughout the country the average lengths of haul, particularly in the tramp services seem to have dropped considerably.

With the relatively insignificant impact that industrial relocation and development of new industrial sites have had on the coastwise transportation pattern, it seems that the competition from other modes of transportation has been of much greater importance, particularly the great developments within the domestic road and air services for freight and passenger movements respectively.

The Affects of the Changing Distribution of Population

The distribution of Norway's population reflects the nature of the land and the resources. The large areas of unproductive land, mostly rocky and forest covered, which together account for almost ninety-six per cent of the total land area, are practically devoid of any population. The majority of the population is concentrated on the remaining small percentage of land classified as arable land and permanent grassland, and a

large proportion of this land is located on or near the coast. It is estimated that close to ninety per cent of the total population of the country lives less than six miles away from the sea, and of the country's twenty largest cities, only two are located in the interior.

A survey of net out-migration from the predominantly rural areas to the urban centers has shown an average of 1.7 per 1,000, which is about twice the average annual natural growth of the population.¹⁶

The greatest percentages of rural out-migration since the end of the war have generally been found in the Northern region, where Nordland County had a net out-migration of 7.0 per 1,000 in 1965. The other two counties have been close behind, and when one considers that all the cities within the region are located on the coast, it is clear that coastwise shipping still is of great importance. The importance of the coastwise shipping is also dependent on relatively limited increases in the importance of overland transportation in an area, and this has also to a great extent proven to be true in the North.

The agricultural areas north of Oslo have also had great out-migrations from the rural areas, but here the migration has to a large extent been to the cities of the interior, and this is the only part of the country that has experienced a total increase in the population of the interior. Large parts of the rural out-migration of the Eastern region have also been directed toward Oslo and its rapidly growing suburbs.

The four counties around the Oslofjord have a total population

¹⁶Vital Statistics and Migration Statistics (Norges Offisielle Statistikk XII 220. Oslo: Central Bureau of Statistics of Norway, 1967), p. 44.

that is close to one-third of the total population of the country. Almost the entire area is urbanized, and this should indicate a great dependency on the coastwise shipping services. Other factors are, however, also involved, the competition from rapid overland transportation being the major factor of changes. In spite of the great movement of people to this area since the war, and the majority of the population living close to the sea, the overland transportation routes have developed at a much more rapid rate than have the coastwise shipping services, and today the coastwise movement of passengers and goods in this area is only a fraction of the total number moved by the overland modes of transportation.

In the Western and Central regions there have always been great concentrations of people on the coast, and this trend continues today. Because of the rather rugged topography, there are no other places to develop the cities, and the seaward orientation is therefore still strong. But also in these regions the importance of the coastwise shipping services has been influenced by the rate of development of alternate transportation routes, and in most of the areas, in spite of the greater number of people moving out to the coast, the coastwise shipping services are losing in competition with the more rapid and efficient overland transportation.

Over all then, it seems that the greater concentrations of people along the coast have helped to keep many of the coastwise services alive, while the annual increases in the movement of passengers and freight will both be taken over by the alternate modes of transportation.

The Development of Alternate Transport Facilities

At the same time as the coastwise shipping fleets were rebuilt and modernized after the Second World War, an even faster development was taking place in the development of different alternate transport facilities. As a result of the relatively rapid industrialization and economic growth, the standard of living increased rapidly, and the flow of commodities and people reached quantities never experienced prior to, or during, the war. To accomodate this increasing flow of commodities and passengers, the government realized that it was necessary to develop the railroads and roads to make these services more efficient.

The railroads. The rail services which were the first serious competitor to coastwise shipping in Norway, as well as in most other modern, maritime countries, has seen a steady increase in importance after the war, and it is hard to say whether it has reached its peak yet or not. In most other industrialized countries, this peak was reached long before World War Two, but the development has been rather slow within Norway, and the railroads have therefore been able to compete successfully even after the war.

The length of the track seems to have reached its peak; since 1956 has been fluctuating between 4,300 and 4,450 kilometers. The rolling stock has been modernized, and the number of cars has been cut drastically, but because of the greater sizes of the new cars, the capacity has remained fairly stable since the end of the War. More and more of the lines are being electrified, and the increase has been from less than one-fourth of the total mileage in 1950 to almost one-half in 1965. The types of commodities carried by the railroads vary from one area of the

country to another, but the majority is either industrial bulk or general cargo.

The top-seven commodities, by total weight carried, accounted for about 45 per cent of the total tonnage carried, and about 62 per cent of the total transport work in ton-kilometers. By weight, the most important commodities carried were wood and wood products, chemicals, and miscellaneous manufactured commodities, in that order.

Railroad transportation has never been in much direct competition with the tramp vessels, or any other coastwise services, at least not for short- or medium-length hauls. On the map of Norway it can be seen that the rail-lines do not run parallel to many of the coastwise routes. The most heavily used railroad routes are the ones between Oslo and Bergen and Oslo and Trondheim, and Trondheim and Bodø. There are no rail-lines going north-south along the West coast and there are no lines in the North, so there is no competition on these routes. On the routes between Oslo and Bergen the railroads provide for a much more rapid service than does coastwise shipping, and the same is true for the route between Oslo and Trondheim. The route between Trondheim and Bodø was only completed a few years ago, and there are no proofs as of yet to the competitive powers of the railroads on that particular route.

The railroads have the great advantage in that they are State owned and operated and are therefor able to keep competitive rate for the various kinds of commodities. The State also has the control of all transport rates within the country and these are quite often favoring the railroad services over certain routes. Had it not been for the State control and subsidies, it is rather dubious that the railroads would be as

important as they are today. The National railroads have had operational deficits every year since the end of the War, and deficit has showed a fairly even, and rapid, increase every year. The operational deficits were 51.5 million in 1946/47, 92.9 million in 1955, and as high as 207.0 million in 1965. The government is thus spending approximately four times as much money on the railroads every year as it spends on all the scheduled coastwise shipping operations. Without the State backing, many of the railroad routes would probably have to be discontinued, and the importance of the railroads would undoubtedly decrease fairly rapidly. The only profitable railroad route today is the route between Kiruna and Narvik, carrying increasingly larger quantities of Swedish ore to the coast. This route is, however, treated as an international route in this paper, and is therefore not counted in the annual freight picture.

The road services. The most serious threat to coastwise shipping has been the trucking and other road services, which have seen a great increase in importance during the last ten to fifteen years. The roads have been vastly improved in recent years, and because of the new road building programs, more and more outlying rural communities are today being connected with the main highway system.

The total number of kilometers of National and Provincial roads has only had a 25 per cent increase since 1945, but the number of kilometers of hard-surface roads has almost quadrupled. The program for road improvements has grown very rapidly, and also since 1965 there has been great changes. Many of the highways are today being classified as Europe-Highways, and to be classified as such they have to meet fairly high standards as to the surface material and width of the road. In

spite of these programs, the percentage of hard surface roads to the total mileage is only a little over 20 per cent.

In the period between 1945 and 1965, the total number of motor vehicles also quadrupled, and the number of trucks doubled in the period from 1945 to 1955. Since 1955, the number of trucks has seen a relatively slow increase, approximately 10 per cent, but because of larger trucks, the capacity has been increased at a much more rapid rate.

A relatively small number of the trucks are owned by larger companies that provide for regular, scheduled services between certain cities and regions. The majority, however, are privately owned and operated and are used where they are needed, usually running on short-period contracts.

Western Norway has seen great improvement in the road network recently, and the trucking services have become competitive on the short East-West routes. Because of the topography and irregularity of the coastline, there is no major highway running parallel to the coast, and there is therefor no direct competition with the medium- and long-distance coastal services. The same is true in Central Norway, where trucking has become very competitive on the short hauls, and in many cases have eliminated the local services. Along the coast, however, the shipping services are still able to provide for relatively rapid and efficient services.

The North has the disadvantage of an irregular coastline, and long distances with only scattered population clusters, and until recently no important industries. The trucking therefore never really became very important as a freight mover, with the shipping services providing for

efficient long distance freight movement. In the last few years many of the highways close to the major population centers have seen great improvements, and the trucking business has become very important within and around these centers. In the total transport picture, trucking is still, however, rather insignificant.

Since the majority of the commodities, especially general cargo and lighter bulk commodities are moved within and around the major population areas, the greatest changes can be expected to take place in the Eastern region, especially in the Oslofjord region, which has almost one-quarter of the total population of the country and most of the industries.

The Oslofjord region is the only area within the country that has a number of four-lane highways, and the region also has the majority of the hard surface highways in the country. Today, the great majority of the goods handled by the trucking services are found within the Eastern region, and most of the hauls are over relatively short distances. The Oslofjord region is also the only part of the country where there is a direct competition between the three major modes of transportation, and trucking has been victorious, as all but two shipping services have been discontinued and the railroads have only small quantities of goods moved within this region.

Today, nine out of every ten tons moved by the four competitors in this study are moved by the trucks and other road services. Just between 1955 and 1965 there was a 50 per cent increase in the total amount of freight moved by the different road services. The relative importance has also showed a great increase, especially in the total transport-work picture. The road services were a close third in 1955, with about 18 per

cent of the total ton-kilometers, and in 1965 they had risen to an undisputed first place, with 32.2 per cent of the total amount of ton-kilometers.

Due to its competitive powers, the average length of haul increased by about 50 per cent, from 10.4 kilometers in 1955 to 16 kilometers in 1965, showing that trucking mainly competed for the short-haul freight.

The air services. The domestic air services have not yet become very important movers of freight, and they only account for a fraction of the total freight movement. Nevertheless, their importance is increasing and the total number of ton-kilometers carried out by them increased tenfold in the period between 1955 and 1965, although the 1965 total of 29.5 million ton-kilometers only amounted to four-tenths of one per cent of the total transport work.

Great increases have especially been seen in the amount of mail carried, especially during the 1960's, when the daily services were extended as far north as Tromsø, Alta, and Kirkenes. It seems clear that the airlines have taken over most of the mail service that the Coastal Express used to carry out. The airlines have also taken over much of the movement of fruit between Oslo and the North, vegetables and berries between the East and the Central and the North, and fresh fish from the North to Oslo in particular. These commodities are relatively light weight and of relatively high value, and because they are consumer products it is important that they arrive fresh at the destination.

All these different services provided by the airlines do not yet

create any major problems as competition to other modes of transportation, but it would not be surprising if the air services became serious competitors in the future, especially for commodities such as the ones mentioned above. The airlines are already proving to be in competition with the coastal shipping services over the longer distances, and the shipping services will undoubtedly also be the great sufferer in the future.

Considering all the different factors that have influenced the transport pattern of the coastwise shipping services, there is no doubt that the competition from the alternate modes of transportation has had a much greater effect than any of the other factors.

New industrial locations and the shifts of populations have only had relatively small influence on the pattern in a few areas, and the over all affect has not been as great as one might expect. In spite of an increasingly larger percentage of the population and industries being located along the coast, the relative importance of the coastwise services has been declining, and many of the local services have had to discontinue. Most of these negative changes are due to the competition from the more rapid and efficient overland transportation routes.

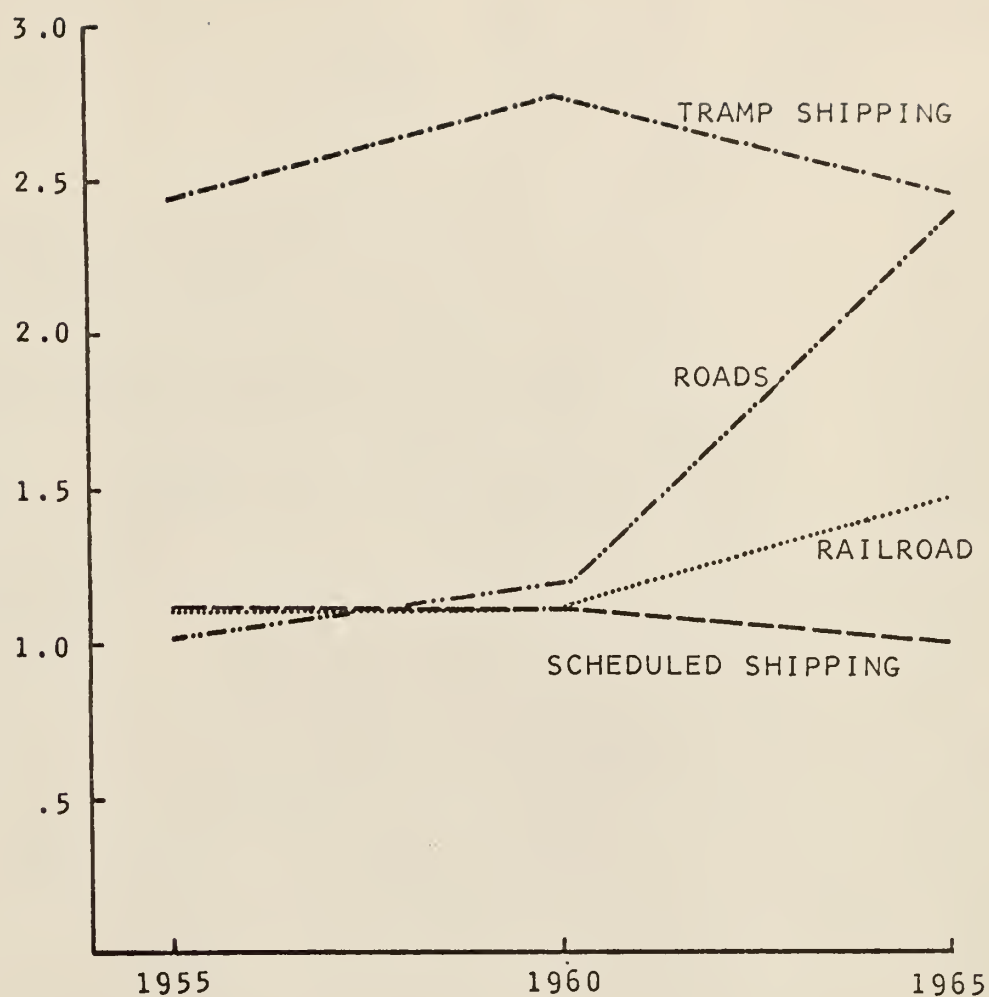


FIGURE 16

MILLIONS OF TON-KILOMETERS TRANSPORTED BY THE
DIFFERENT MODES OF TRANSPORTATION

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1958, 1961 and 1965.



FIGURE 17

PERCENTAGE OF TOTAL NUMBER OF TON-KILOMETERS
TRANSPORTED BY THE DIFFERENT MODES
OF TRANSPORTATION

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1958 and 1965.

CHAPTER V

THE TRENDS IN THE COASTWISE PASSENGER MOVEMENT

Passenger Movement by Coastal Shipping Services

The analysis of the passenger movement by the various modes of transportation is usually much less complicated than the freight movement, and the trends seem to be the same in all modern, maritime nations. People seem to be in more and more of a hurry, and the most rapid and efficient services eventually take over more and more of the total movement.

The different scheduled coastwise shipping services have always played an important role in the domestic movement of passengers, especially on the West coast and in the North, where there has been a general lack of good and efficient overland transportation. Even today, many people along the long, irregular coast are more or less dependent on the services of the Coastal Express and other combined passenger/general cargo vessels. Much of the transport of passengers between the islands and the mainland, and within the deep fiords, is also done by the various local shipping services.

Total scheduled coastwise shipping has seen an increase of 24 per cent in the number of passengers moved between 1955 and 1965, while the total passenger transport in passenger-kilometers increased by 16 per cent. This proves that in spite of increased competition from airlines and road services in particular, the coastwise services have experienced an absolute increase in the movement of passengers within the country. Most of the increase was due to the efficiency of several local routes.

The local services had an increase of 25 per cent in the ten-year period, while coastal services only saw a 6 per cent increase.

The Coastal Express, between Bergen and Kirkenes is by far the most important of the coastal passenger/cargo routes, carrying over 65 per cent of the total amount of passengers carried by the coastal services in both 1955 and 1965.

In the period from 1955 to 1965, Coastal Express services had an increase of some 6 per cent, while the route between Bergen and Stavanger experienced an increase of 78 per cent. The latter increase was due to the new high-speed hydrofoil boats that were introduced around 1960.

The change to the hydrofoil routes has been of great significance as the average travel time by sea has been cut to approximately one-third of the original time taken by the combined passenger/cargo vessels. Bergen and Stavanger are the two major urban centers in the Western region, and there is a great flow of people back and forth between the two cities throughout the year.

Coastal shipping services have always been of great importance in this area since the coastline is very irregular, and the roads, which are the only other ways of transport line between the areas, have to zig-zag in and around most of the fjords and coastal irregularities, making the landward distance about twice as long as the seaward distance. The main highway between Bergen and Stavanger, via Haugesund, is a narrow dirt road most of the way, and the total distance of travel amounts to about 400 kilometers. The highway is also broken up by ferry services in two places, and the time it takes to travel this road is rather long. In comparison, the distance that the hydrofoil vessels have to travel is

only about 200 kilometers, and these vessels are able to maintain a much higher average speed than the automobiles along the highway are able to, thereby making the shipping services much more rapid and efficient.

The hydrofoil routes between Bergen and Stavanger have accounted for most of the great increase in the total passenger movement within the main route between Bergen and Oslo, and, together with the great increases with similar services in the Oslofjord area, have accounted for the absolute increases in the passenger movement for the country as a whole. Of the combined passenger/general cargo services, the Coastal Express experienced a 6 per cent total increase in the number of passengers moved, while the other services experienced a great reduction, from about 81,000 in 1955 to only 6,000 in 1965. Most of the decrease was seen on the routes between Central Norway and Northern Norway where there was direct competition with both railroad and air services.

The passenger movement with the general cargo ships has always been somewhat limited, the ships carrying 4.2 per cent of the total number moved by coastal services in 1955. These ships are generally slower than the combined passenger/general cargo ships, and this seems to have been a deciding factor in the great decrease in the number of passengers moved between 1955 and 1965. By 1965, the general cargo vessels only carried a total of about 1,000 passengers, or less than one-half of one per cent of the total coastal passenger movement. The general cargo services can therefore be regarded as insignificant in the total passenger movement within the country.

The average length of journey has not changed much since the end of the Second World War, as far as the coastwise shipping services are

concerned. The average length of journey was 55.7 kilometers in 1955, and decreased to about 52.1 in 1965, giving an indication that most of the passenger movement is by local services. The average length of journey on coastal vessels is estimated to be about 300 kilometers. The average length of journey on the Coastal Express has not changed much, the average in 1947 being 340.5 kilometers as compared to 346.3 kilometers in 1955 and 343.2 kilometers in 1965. Since the Coastal Express is the most important long-distance service it should be fairly safe to assume that the changes have been rather insignificant for the other coastal services as well.

Another interesting aspect of the passenger movement by the various shipping services is the seasonal variations. On the Coastal Express, for example, approximately 40 per cent of the total number of passengers travel in the three summer months, June, July, and August, July alone handling about 15 per cent of the total. The month of February, which has the least traffic, only has 4.5 per cent of the total movement. Many of these summer journeys are also made by tourists, and most of them travel the whole distance from Bergen to Kirkenes, and often round-trip.

If it had not been for the increasingly greater number of tourists traveling with the Coastal Express, the statistics would without doubt show an absolute decrease in the total number of passengers from 1955 to 1965. During the summer months, when about one-half of the total annual number of passengers use the Coastal Express, the ships operate at full capacity. Most of the routes are booked full before the summer-runs start. The pressure has been so great during the last few years that the companies have put an Express service in on the route from Bergen to

Tromsø, where the heaviest traffic occurs.

In addition to giving the Coastal Express an absolute increase in the number of passengers, the tourists and vacationing people also help keep the length of journey up, thereby also increasing the number of passenger-kilometers. The majority of the tourists buy round-trip tickets, and these journeys, which are several times as long as the average journey taken by the normal users, help keep the average length of journey as high today as it was right after the Second World War.

The long distance movement of passengers, fairly common before the Second World War, is now almost vanished, except for the long-distance journeys made by tourists during the summer months. Most of the trips with the Coastal Express go within the boundaries of the individual counties. 85 per cent of the total passenger traffic between Rogaland and Finnmark moves within the respective county boundaries. Of the 54 per cent of the total traffic on the Coastal Express that moves within the respective boundaries, Nordland and Troms have 20 per cent and Finnmark has 35 per cent.¹⁷

In spite of the absolute increase of about 6 per cent in the total passenger movement done by the Coastal Express, this coastal service has lost most of the net annual increases to the air services. The Coastal Express is the only coastal service of major importance that is in direct competition with both railroad and air services. The competition from the railroad comes on the stretch between Trondheim and Bodø, where much of the short distance movement of passengers between places that are not

¹⁷Bjørn Foss, Rutefartens Økonomi (Oslo: Transportøkonomisk Institutt, 1967), pp. 20-21.

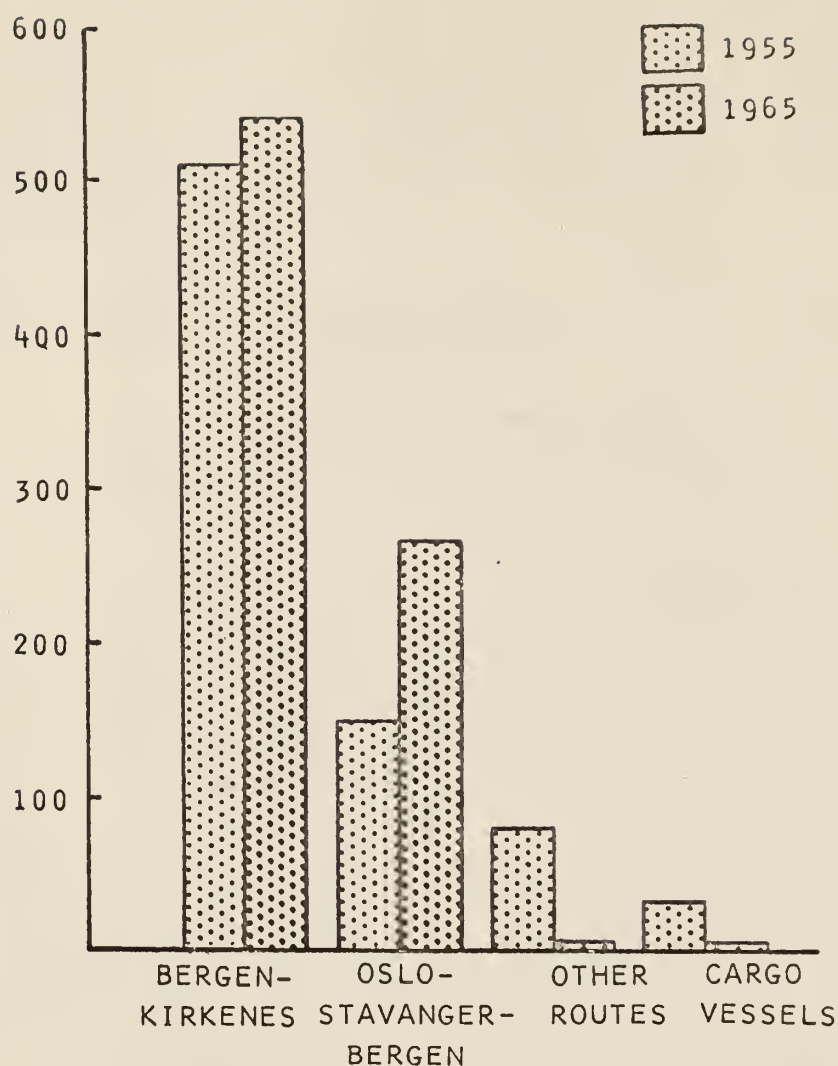


FIGURE 18

THOUSANDS OF PASSENGERS TRANSPORTED BY COASTAL SHIPPING SERVICES ON MAJOR ROUTES

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1958 and 1965.

served by the Coastal Express now goes by railroad. On such routes the railroad provides a much more rapid and efficient service than does the Coastal Express. Before the completion of the rail line, these passengers had to go by both local and coastal shipping services to get to and from the same places.

The greatest competition, however, has come from the domestic air services, particularly since the direct, daily services were extended north to Bodø, Tromsø, and the larger towns in Finnmark.

On routes where there is a direct competition between the air services and coastal shipping, as on the routes between Bergen and Alesund, and between Trondheim and Tromsø, the air services have taken over most of the passenger movement, and in 1965 carried respectively 75 and 83 per cent of all passengers. The railroads have lost much of the traffic movement to the competing air services on the routes from Oslo to Bergen and from Oslo to Trondheim, and much of the short distance movement has been lost to the various road services.

Passenger Movement by Local Shipping Services

Local scheduled services experienced a 25 per cent absolute increase in the number of passengers, most of it occurring in the Western region. Also the East and the North experienced some increases, while the Central region experienced a sharp decline, totalling some 73 per cent.

The decreases in the Central region are mainly due to vastly improved roads and subsequent road services in that region since the middle 1950's. A large share of the local passenger movement is also taken over by the Coastal Express, while the east-west movement has been taken

over by the road-ferry services. The North has had great improvements in the road-net work, but a large share of the population is living on the coast and islands off the coast, and the local shipping services are therefore still important in the total movement of passengers within that region.

Because of the relatively limited road construction and road improvement in most parts of the country, the local shipping services are in many areas still unchallenged by overland transportation services. Road services in the immediate surrounding areas of the larger urban centers are, however, taking over an increasingly larger share of the total passenger movement every year. The West has lagged behind in road-construction, and because of the highly irregular coastline, much of the overland transportation is therefore broken up and does not provide rapid or efficient service.

As in the Northern region, the local services are strong because of the general lack of competition from the overland transport services. The lack of good quality roads is generally due to the rugged and irregular terrain within this region. The roads that have been constructed run in and out along the fjords and other irregularities, and the result is that most overland distances are much longer than the distances by sea. The road network is also broken up in several places by ferry services that carry cars and passengers from one side of a fjord to the other, or between the islands and the mainland. The ferry services are often over relatively long distances, and the speed is slow, often resulting in long waiting periods at the ferry docks. All these factors result in a rather slow and relatively inefficient road service between

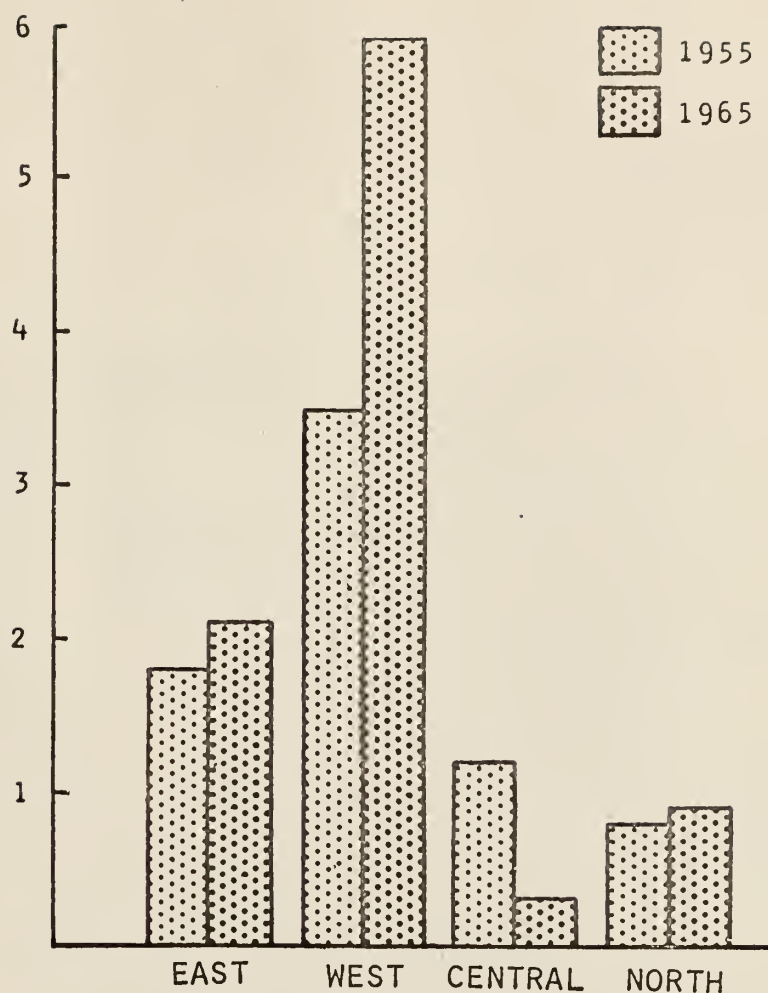


FIGURE 19

MILLIONS OF PASSENGERS TRANSPORTED BY LOCAL
SHIPPING SERVICES WITHIN THE REGIONS

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1958 and 1965.

most areas, and the local shipping services have therefore been able to keep most of the passenger movement.

Several outlying communities are still without any roads connecting them with the main road network, and the people in these communities, usually on islands, still depend on the local shipping services. These areas are often far away from the major urban centers and therefore are in the outer limits of the local shipping routes where the routes are uneconomical. Because of the more or less isolated rural communities the local shipping services are not allowed to discontinue the services in those areas.

The increasing number of private automobiles has had a great impact on many of the local shipping services. The competition from the private automobiles, as well as the public road services, is particularly felt in the Eastern region, where most of the population, industries, and high quality roads are found. This region also has the counties with the highest average per capita income in the country, thereby enabling more people to own cars.

The total number of private automobiles in the country has risen rapidly in the period from 1955 to 1965. In 1955 the number was just over 116,000, while by 1965 the number had jumped up to over 465,000, an increase of over 400 per cent. This resulted in that the number of persons per automobile in the country was reduced from 29.3 in 1955 to 8.0 in 1965.

One can observe that the number of persons per private automobile is highest in the two regions, the North and the West, where the local shipping services experienced the greatest absolute increases in the

total number of passengers carried. The lowest number of persons per private automobile is found in the East, where there are some 6.6 persons per private automobile. The Central region has also seen a great reduction in the number of persons per private automobile, and this, coupled with the great improvement in public road transportation, are believed to be the reasons for the great decrease in the total number of passengers carried by the local shipping services within that region.

The local services do not see the great seasonal fluctuations, but rather experience great peaks on the week-ends. All the local shipping services go in a radial pattern out from the largest city, or cities, within the individual county. Most of the passengers are traveling between the urban centers and the immediate outlying areas. Most of the people in the cities use the services to get out to their cabins or to go fishing, hunting, or just camping, and most of the rural population uses the services to go to town shopping on Saturdays, thereby creating a week-end peak period similar to the summer peak-period experienced by the coastal services. These week-end peaks have been reduced somewhat throughout the country, and particularly in the Oslofjord area and around the larger cities, where the increasing use of private automobiles undoubtedly is responsible.

Overall Trends

In looking at the total number of passenger-kilometers by the different modes of transportation during the ten-year period from 1955 to 1965, it is clear that scheduled shipping services have experienced a slight increase, while the railroads have remained about the same. The greatest absolute increases have been experienced by the road and air

services, the latter one particularly in the short period from 1964 to 1965.

During the same period of time, the road and air services are the only two that have experienced increases in relative importance. The railroads have experienced a relatively sharp decline, while the scheduled coastwise shipping services have had a slight decline. The decrease in the relative importance of the coastwise shipping services is mainly due to the increasing competition from the air services over medium and long distances. The decrease in the relative importance of the local shipping services has mainly been due to the increasing competition from the road services, including private automobiles. The great competitive ability of the various hydrofoil services has resulted in such great increases in the number of passengers carried over certain routes, that the overall decline has only been slight. In looking at the other coastwise shipping services one can see that their relative importance has declined very rapidly, and most of those services are of only minor importance in the total passenger movement within the country today.

The direct competition from the railroads along parallel routes has always been very limited, and this competition can be said to be of little or no importance today. Over longer distances the passenger movement is taken away by the air services, which generally offer much faster services and also are able to compete price-wise.

It seems only natural, that as long as the airlines continue to serve a greater and greater number of places every year, and at the same time are able to keep their prices on the same level as the competitive services, they will receive an increasing share of the medium- and

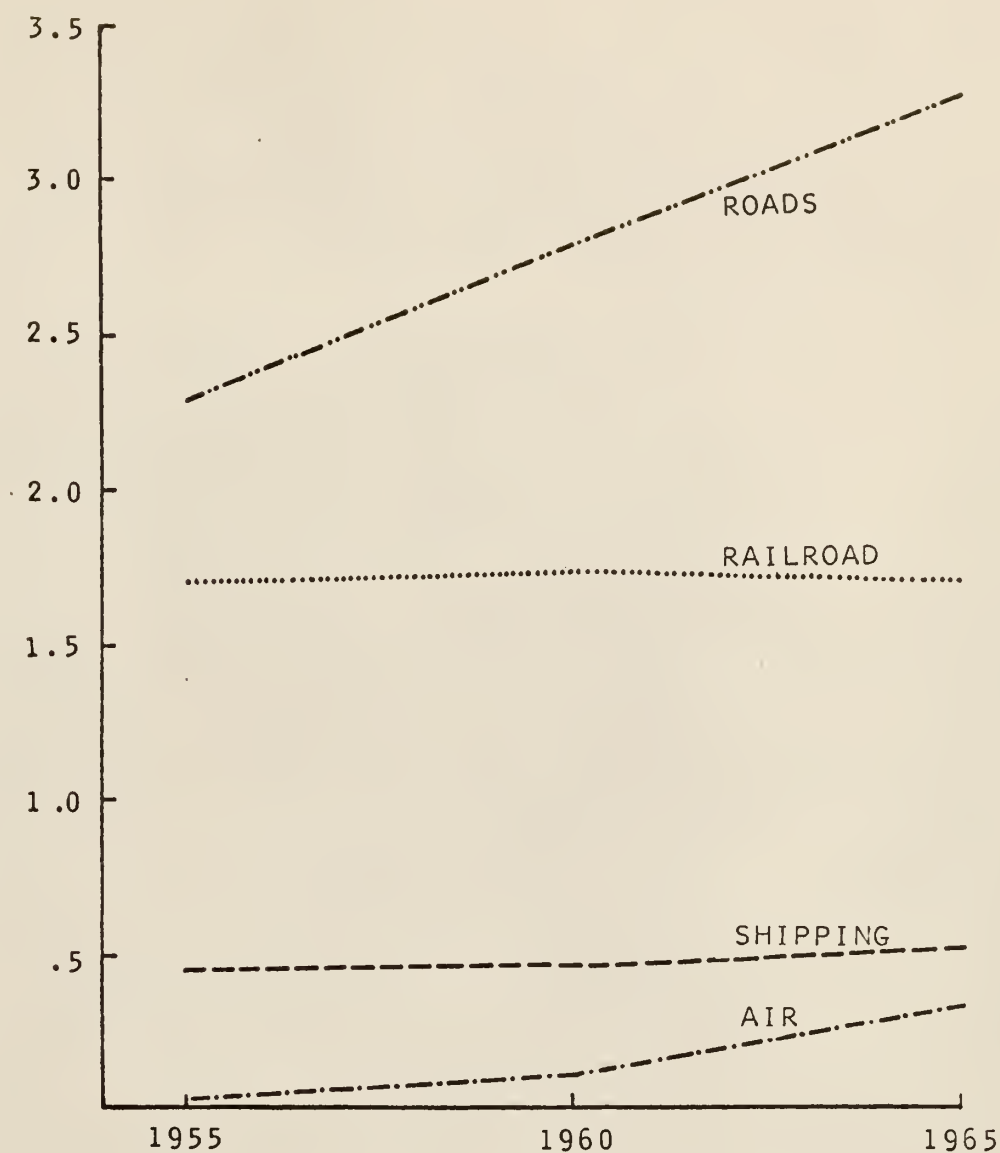


FIGURE 20

MILLIONS OF PASSENGER-KILOMETERS TRANSPORTED
BY THE DIFFERENT MODES OF TRANSPORTATION

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1958, 1961 and 1965.

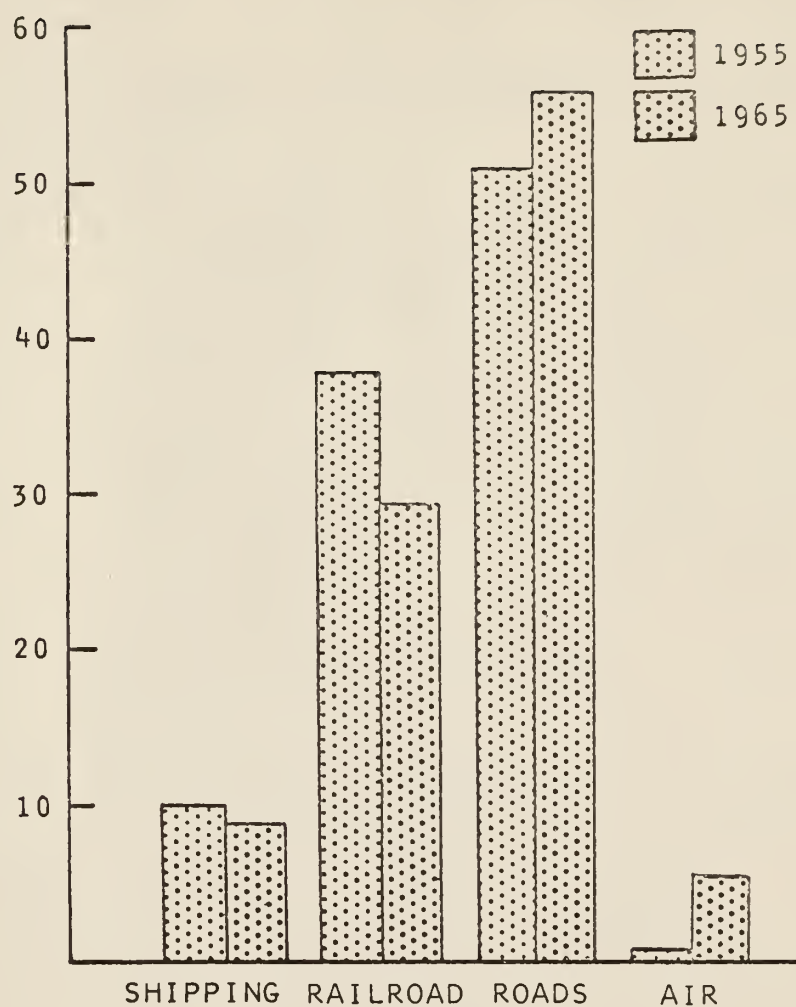


FIGURE 21

PERCENTAGE OF TOTAL NUMBER OF PASSENGER-KILOMETERS TRANSPORTED BY THE DIFFERENT MODES OF TRANSPORTATION

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1958 and 1965.

long-distance passenger movements. As long as the great road building and improvement programs are continuing throughout the country, and the number of persons per private automobile is decreasing rapidly, it seems only natural that the various road services will take over an increasingly larger share of the total short distance passenger movement within the country.

CHAPTER VI

CONCLUSIONS AND POSSIBLE FUTURE TRENDS IN THE COASTWISE SHIPPING IN NORWAY

Conclusions

After studying the trends in the coastwise shipping in Norway since the end of the Second World War, it seems clear that the country is experiencing about the same changes as the other modern, maritime nations have, although Norway seems to be a little behind in time.

The United States and the United Kingdom experienced a change-over from coastwise shipping to overland transportation during the 1940's, while Australia and New Zealand followed similar trends in the 1950's. In spite of losing most of her coastwise shipping fleet during the war, Norway rebuilt the fleet after the war, and by the early 1950's the coastwise shipping fleet was as large as it was before the war broke out. The reason for this is undoubtedly that coastwise shipping is of a much greater importance in the transport picture in Norway than in most of the other modern, maritime nations. The importance of the coastwise shipping is primarily due to the lack of development of modern, high quality overland transport routes. Norway has not yet reached a distinct peak in her railroad mileage, and because of slow highway developments, the road services did not become a serious threat to the coastwise services until the mid 1950's.

The decline in the relative importance of coastwise shipping in all the maritime nations has been due to the serious competition from overland transport services for the general cargo moved within the

countries. Coastwise shipping is generally losing most of the general cargo movement to the trucks, while they retain an advantage for the long distance movement of bulk commodities.

Trends toward greater increases in the amount of general cargo than the amount of bulk commodities have also occurred in Norway. However, the coastal shipping services experienced both an absolute and a relative decline in ton-kilometers transported between 1955 and 1965. Most of the increasing amounts of general cargo went to the competing railroad and road services, both of which experienced increases in their relative importance during this period of time.

Tramp services still carry most of the bulk commodities within the country, but because of the small increase in the bulk tonnage carried in the same ten-year period, the tramp services also experienced a decline in relative importance.

All the other maritime nations also experienced a decrease in the fleets operating in coastwise services. The trend was generally toward a great reduction in the number of carriers and the number of ships, but an increase in the size and the average speed of the ships, thereby making the average shipping service more efficient than it was prior to the war. The same type of trends can be seen in Norway. The number of carriers and ships has been reduced in most parts of the country, and there has also been an increase in the average size of the ships. More specialized ships have also been introduced, such as the pallet ships for general cargo and the hydrofoil ships for passenger movement, thereby making the average shipping services faster and more efficient than they were prior to the Second World War.

Norway has lagged somewhat in industrialization and economic growth. The greatest increases in both industrialization on a relatively large scale and economic growth throughout the country started as late as the 1950's, and the rapid economic growth is still going on today. The greatest increases in the average per capita income have been experienced during the 1960's, and the result is that the development of overland transportation routes has been relatively limited so far, and the full effect of the improvements of road and air services will probably not be fully felt until the early 1970's.

The generally rough topography and irregular coastline has also been an important factor in delaying the improvement of overland transport networks. On an average, Norway has a relatively much longer and more irregular coastline than any of the other countries in this comparison, and the average cost of road and railroad construction is probably much higher too. With quite a few people still living more or less isolated from the main transport networks, particularly on the many islands off the coast, the coastwise shipping services are still very important in certain areas of the country. In some of these areas the coastline is also so rough and irregular that coastwise shipping services will probably always remain the fastest and most efficient transport service available.

Changes have not been so drastic in Norway as in Britain, as a matter of fact there has been an absolute increase in the total number of passengers moved by the coastwise services between 1955 and 1965. The total absolute increase is, however, due only to the phenomenal increases in the passenger movement by the new hydrofoil services in the Eastern

and Western regions. The majority of the other coastwise passenger services have experienced great decreases in both absolute and relative figures.

Most of the competition for the passenger movement in Norway has come from the air services over long distances and from road services over relatively short distances.

The air services have particularly become competitive during the 1960's as a result of the extension of the route network to the Northern region. The road services have been very effective competitors around the predominantly urban areas, and some of the short distance movement has been taken over by the rapidly increasing number of private automobiles taken into use every year.

Overall then, the trends within the freight and passenger movements by coastwise shipping services in Norway have been similar to those in other modern, maritime nations. Although the trends have developed at a slower rate, it seems clear that with the current developments taking place within the transport development of the country today, Norway is experiencing a gradual change-over from coastwise to overland transportation.

Possible Future Trends

From the analysis of the trends in the coastwise shipping in Norway it seems clear that coastwise shipping still is of great importance in the domestic movement of both freight and passengers. Scheduled coastwise shipping services carried more tons of general cargo and more passengers in 1965 than they did in 1955.

Coastal shipping services have so far been fairly successful,

mainly because of the relatively limited competition from other modes of transportation. The railroads are only competing over one route, between Trondheim and Bodø, where the services run parallel. The only other competitor has been the air services, which have been carrying a rapidly increasing amount of freight since 1964, when the direct services were extended to Northern Norway.

If no more railroad construction is started in the future, the competition from the railroads can be expected to remain about as it is today, and the coastal services should be able to carry relatively large amounts of general cargo in the future as well. Most of this general cargo movement is over long distances, and will therefore probably not fall within the competitive border of trucking. The introduction of jet transport planes in the near future might provide stiffer competition for the coastal shipping services, particularly for certain types of consumer goods and high value merchandise, and might lead to a sharper decline in the relative importance of coastal shipping.

Local shipping services seem to be the coastwise shipping services that will be the hardest hit from future competition from other modes of transportation. Last year it was announced that the average haul of freight in the country was only 45 kilometers and that only about 10 per cent of the total freight was moved over 150 kilometers, thereby bringing the great majority of the freight movement within the competitive range of the trucking business.¹⁸

With the relatively rapid development and improvement of the road

¹⁸News item in Tromsø, November 22, 1968.

and highway network throughout the country it only seems natural that an increasingly larger share of the total freight movement will go over to the trucking and other road services. It has been estimated that by increasing the permitted axle load on a highway from 8 to 10 tons, the heavier trucks will be able to compete with cargo vessels over distances that are up to 35 per cent longer.¹⁹

With the increasing amounts of money spent on the highway improvement throughout the country it seems clear that trucking and other road services will soon become much more competitive, and local shipping services will undoubtedly experience a relatively sharp decline in relative importance during the next few years.

The tramp vessels only see limited competition from the railroads for the bulk movement within the country, and this is due to the lack of direct competition over parallel routes between the two services. Although the tramp services have taken care of the majority of the bulk movement within the country since the end of the war, the total amounts of tons to be carried has not seen much of an annual increase, and with this trend continuing the tramp services are also experiencing a decline in relative importance.

As the country continues to concentrate on the development of the electro-chemical and electro-metallurgical industries, which are mainly dependent on direct imports of raw materials and direct exports of finished products, thereby being almost totally independent of the domestic transportation network, there will be no great increases in the amounts

¹⁹Bjørn Foss, Rutefartens Økonomi (Oslo: Transportøkonomisk Institutt, 1967), p. 162.

of bulk to be carried internally, and tramp vessels also seem to be heading towards a greater decline in relative importance in the future. As more speed is introduced into the domestic transport pattern, the tramp vessels will also undoubtedly lose much of the remaining share of the general cargo that they carry today.

The future of the coastwise shipping services seems even darker when one considers the future trends of the domestic passenger movement. The rapid increase in the relative importance of the domestic air services has continued since 1965, and the services carried approximately 1 1/4 million passengers in 1967, as compared to 746,337 in 1965. At the same time the coastal shipping services showed little or no increase in the total number of passengers carried.²⁰

These figures indicate that coastal shipping is already experiencing a more rapid decrease in relative importance than it did from 1955 to 1965; this trend is predicted to continue. Except for the competition from the air services, the competition will remain fairly limited for the long distance movement of passengers. The only successful coastal shipping services for the passenger movement will continue to be the hydrofoil services. With additional hydrofoil, or similar high-speed services there should be a good possibility of a revival of some of the coastal and local shipping services, particularly between the more populated areas of the country.

Local shipping services seem to be in more serious trouble, mainly due to increasing competition from various road services. The local

²⁰Central Bureau of Statistics, Norway: Economic Survey 1967 (Oslo: Norges Offisielle Statistikk XII 228, 1968), p. 83.

shipping services only carry passengers over an average distance of about 30 kilometers, and most road services are very competitive over these distances today. In addition to the larger share of the passenger movement taken over by the public road services, an increasingly larger share of people will travel by private automobiles. The rapidly increasing standard of living since the war, and particularly since the mid 1950's, has resulted in a greater number of people being able to own cars, and as the highway network is improved the automobiles are used over larger and larger parts of the country.

Over all the coastwise shipping will without doubt continue to be of great importance in the total transport picture of Norway, but without some drastic improvements over major routes the relative importance will continue to decline, perhaps even at a much more rapid rate than it has so far.

In a country where there are so many important modes of transportation, and coastwise shipping still is of great importance in some of the coastal areas, it should be possible to concentrate upon more cooperation rather than competition, particularly since the government has relatively strict controls over route changes and prices. Instead of running two or three services parallel on some routes, the most uneconomical route, or routes, should be discontinued, and the different services should rather try to complement each other.

There should be possibilities for the introduction of container traffic on most routes, converting the railroads and shipping services so that they could complement road services in all the areas where their services would be more economical. Both the railroad and shipping

servicos should be able to revive some of their routes by improving and modernize their services, but the problem seems to be the differences of private versus government entorprise.

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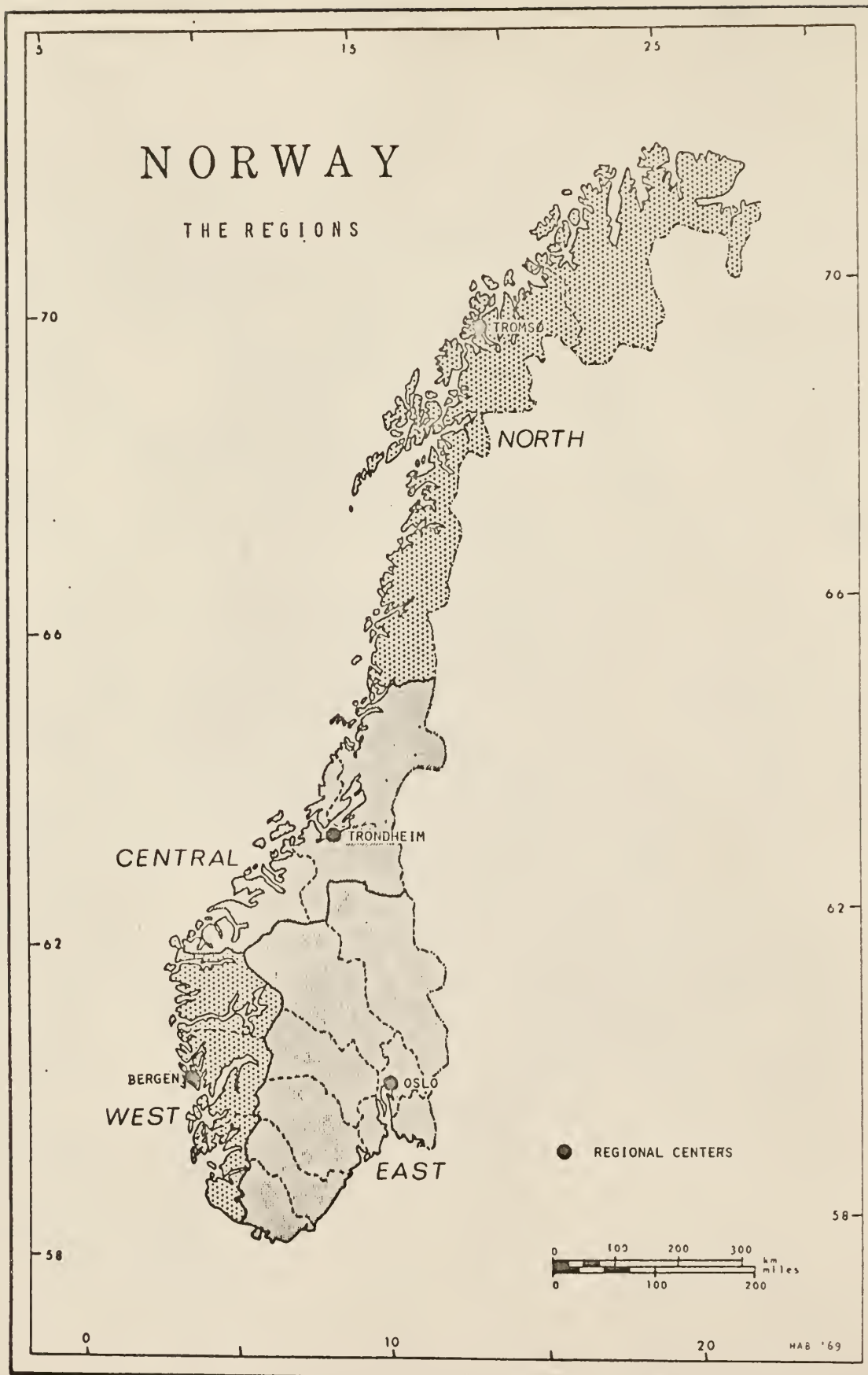
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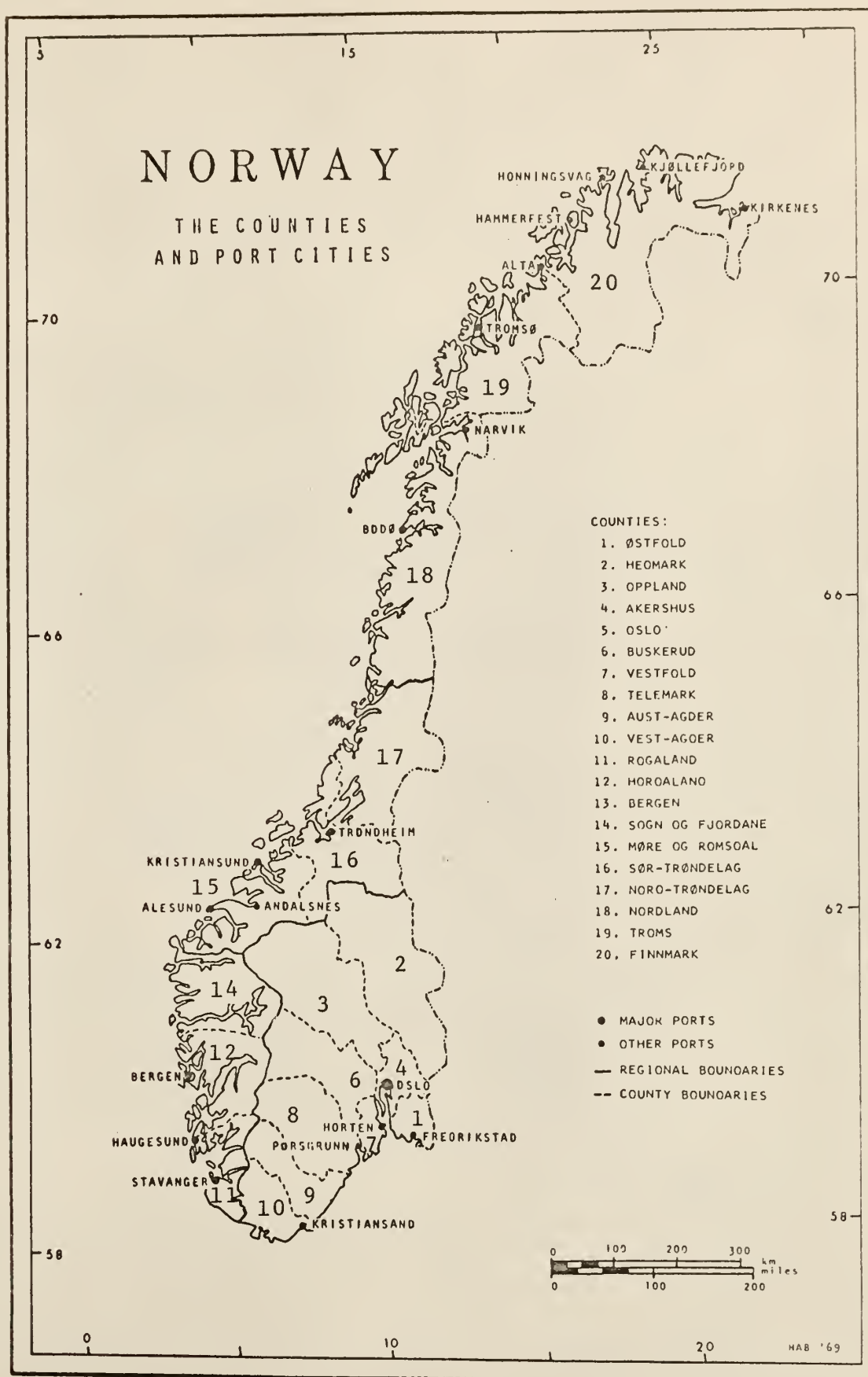
APPENDIXES

APPENDIX A. MAPS



NORWAY

THE COUNTIES AND PORT CITIES



APPENDIX B. TABLES

TABLE V
CHANGES IN THE COASTAL SHIPPING FLEETS BY REGIONS

Region	Type Change	1955	1965	% Change
North	No. of Ships	32	33	+ 3
	Total Tonnage	20,675	23,995	+ 16
Central	No. of Ships	22	20	- 9
	Total Tonnage	16,538	15,742	- 5
West	No. of Ships	46	31	- 33
	Total Tonnage	40,308	30,585	- 24
East	No. of Ships	14	8	- 43
	Total Tonnage	4,874	2,597	- 47
Total Country	No. of Ships	114	92	- 20
	Total Tonnage	82,395	72,919	- 12

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics, 1958 and 1965.

TABLE VI
CHANGES IN THE LOCAL SHIPPING FLEETS BY REGIONS

Region	Type Change	1955	1965	% Change
North	No. of Ships	57	77	+ 35
	Total Tonnage	12,957	13,214	+ 2
Central	No. of Ships	58	24	- 57
	Total Tonnage	10,056	4,427	- 56
West	No. of Ships	134	121	- 10
	Total Tonnage	21,834	24,324	11
East	No. of Ships	63	33	- 47
	Total Tonnage	6,257	3,859	- 38
Total Country	No. of Ships	312	255	- 21
	Total Tonnage	51,104	45,824	- 10

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics, 1958 and 1965.

TABLE VII
CHANGES IN THE TRAMP SHIPPING FLEETS BY REGIONS

Region	Type Change	1955	1965	% Change
North	No. of Ships	341	237	- 31
	Total Tonnage	22,733	19,222	- 15
Central	No. of Ships	350	262	- 25
	Total Tonnage	25,115	27,526	+ 10
West	No. of Ships	638	316	- 50
	Total Tonnage	57,943	39,762	- 31
East	No. of Ships	240	185	- 23
	Total Tonnage	20,642	18,547	- 10
Total Country	No. of Ships	1,569	1,000	- 36
	Total Tonnage	126,433	105,057	- 17

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics, 1958 and Coastwise Transport of Goods, 1964-1965.

TABLE VIII

THOUSANDS OF TONS OF FREIGHT TRANSPORTED BY SCHEDULED
COASTWISE SERVICES BETWEEN THE REGIONS - 1964

From \ To	East	West	Central	North	Total
East	242	178	21	100	541
West	152	631	103	105	991
Central	2	82	117	114	315
North	58	74	44	38	214
Total	454	965	285	357	2,061*

*Because figures have been rounded off, total is a little different from official figure (2,056).

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics, 1965 and Coastwise Transport of Goods, 1964-1965.

TABLE IX
THOUSANDS OF TONS OF FREIGHT TRANSPORTED BY TRAMP
SHIPPING SERVICES BETWEEN THE REGIONS

From	To	East	West	Central	North	Total
East	1955	693	585	256	53	1,587
	1965	711	686	216	86	1,699
West	1955	231	711	161	49	1,152
	1965	277	563	155	41	1,036
Central	1955	319	168	343	238	1,068
	1965	210	193	382	323	1,108
North	1955	39	130	144	326	639
	1965	68	282	289	336	975
Total	1955	1,282	1,594	904	666	4,446*
	1965	1,266	1,724	1,042	786	4,818*

*Because numbers have been rounded off, totals are a little different from official figures (4,459 and 4,807).

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics, 1958 and 1965 and Coastwise Transport of Goods, 1964-1965.

TABLE X
THE DISTRIBUTION OF PRIVATE AUTOMOBILES IN NORWAY - 1965

Region	No. of Autos	Population	Persons/Auto
East	307,063	2,020,476	6.6
West	63,472	709,635	11.2
Central	57,216	556,787	9.8
North	37,492	450,798	11.9
Country	465,243	3,737,696	8.0

Source: Central Bureau of Statistics, Norway: Transport and Communication Statistics 1965 and Migration and Vital Statistics 1965.

RECENT TRENDS IN NORWEGIAN COASTWISE SHIPPING

by

HALVARD ANDREAS BERG

B. A., University of Minnesota, 1967

AN ABSTRACT OF A MASTER'S THESIS

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This study is an attempt to analyse recent trends in Norwegian coastwise shipping, and to determine if these trends are similar to those experienced by other modern, maritime nations including particularly the United States, the United Kingdom, Australia, and New Zealand. These countries have experienced a decline in the relative importance of coastwise shipping during the last two decades. Generally as countries become more industrialized and technologically advanced their inland transport networks improve in extent and quality and coastwise shipping services become less and less competitive.

Norway, in spite of being more seaward oriented and dependent on coastwise shipping, and also having experienced a rather slow development of a modern, efficient inland transport network than the four previously mentioned nations, has followed the same general trend toward a continuous decline in the relative importance of coastwise shipping.

Due to a relatively rapid improvement of the highways and a rapidly increasing number of motor vehicles during the last decade the road services have moved up past the coastwise shipping services to become the most important freight and passenger movers in the country, particularly over short distances. As the great majority of the freight in Norway moves over distances of less than 50 kilometers, the road services will undoubtedly continue to take away both general cargo and passengers from the shipping services.

For long-distance movement of freight coastwise shipping services have experienced less competition from overland transport services. The airlines have started to compete for an increasing amount of general cargo, but are as of yet of minor competitive importance. The tramp

shipping services see only limited competition with the railroads, as they only compete directly over a couple of relatively short routes.

Over most of the short-distance routes the coastwise shipping services are annually losing more and more passengers to the road services, including private automobiles. Over the long distance routes, the coastwise shipping services have lost a large number of passengers to the domestic air lines. While most coastwise shipping services are stagnant or experiencing absolute declines in the number of passengers moved annually, the domestic air lines have had around 15-20 per cent annual increases during the last few years.

In conclusion, it seems clear that Norway is going through the same changes in transportation as the other maritime nations have gone through, with a decline in the relative importance of coastwise shipping, particularly in the transport of general cargo and passengers.

