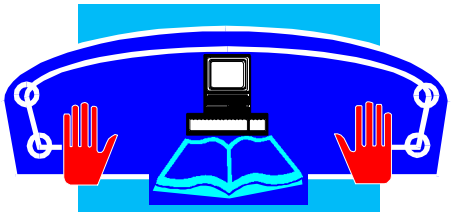

Nwt Commercial Fishing Strategy - Final Report

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NWT Commercial Fishing Strategy

RT & Associates

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Table of Contents

Introduction

Both the territorial and federal governments have a long history of involvement in commercial fisheries development in the Northwest Territories. Commercial fishing was established on Great Slave Lake almost 50 years ago on the recommendation of a researcher from the Fisheries Research Board of Canada, and continues to dominate the NWT commercial fishery. Since that time the government has also been involved in a number of major fishery initiatives throughout the territories including commercial char fisheries in the Kitikmeot and Keewatin regions, turbot, scallop and shrimp fisheries development in the Baffin region, and a broad whitefish fishery in the Mackenzie Delta.

The Department of Economic Development and Tourism (ED&T) has been a major player in these fisheries developments. During the past 10 years, ED&T has provided assistance to the commercial fishery sector through three programs: The Fisheries Assistance Program Schedule A of the Commercial Renewable Resource Use Policy; the Business Development Fund (BDF); and the Economic Development Agreement (EDA).

Through these programs ED&T has supported a wide range of fisheries activities through stock assessments, feasibility studies, product and market Research & Development, and capital for start up and/or expansion of fisheries. In addition, ED&T provides assistance to help offset operating losses caused by the high production and freight costs experienced by northern producers. Yet, in spite of high levels of support, commercial fishing in the NWT remains an economically marginal activity resulting in an ever increasing demand for government support and funding.

The programs and initiatives undertaken by government have never been evaluated to determine what has worked and what has not worked. The large number of government departments and agencies involved in fisheries and a lack of a framework for critical evaluation haa made it very difficult to assess whether government activities have effectively met their objectives.

In addition, there have been a number of recent changes affecting commercial fisheries development: anew EDA that focuses on regional initiatives to develop and expand a viable fishing industry has been put in place; commercial fisheries are gradually moving away from being government driven to being industry driven (for example the role of Qiqittaaluk Corporation in the Davis Strait shrimp fishery); the NWT DevCorp has become a major player in the fishing industry; and the Freshwater Fish Marketing Corporation is no longer responsible for marketing char.

Given the current environment, the Department of Economic Development at the urging of the Standing Committee On Finance (SCOF) was instructed to develop a revised commercial fishing strategy.

In order to develop an effective strategy, ED&T officials determined that strategy formulation should be broken into three separate phases:

Phase I: Market Research
Phase II: Evaluation of Fisheries Development
Phase III: Strategy Formation

In July, 1993 RT & Associates were contracted to undertake the market research. The company was later contracted to also undertake the Evaluation of Fishery Development and Strategy Formulation.

The market research report was presented to the department in August 1993. The Evaluation of Fisheries Development (eight separate reports) was presented to the department from September 1993 to January 1994. And the strategy formulation report was presented to the department in February 1994

Methodology

In undertaking the market research the consultants used several methodologies including a review of written materials, compilation and analysis of government statistics, and personal interviews.

The written materials reviewed included previous market studies commissioned by ED&T, reports produced by the ISTC Seafood and Marine Products Campaign, Trade Reports published by External Affairs Canada, Seafood Market Reports published by the Canadian Association of Fish Exporters, Annual Statistical reports published by Fisheries and Oceans, and a range of other materials produced by the fishing industry.

As well, personal interviews were conducted with 30 individuals representing every level of the fish marketing system including producers, buyers, sellers, processors, brokers, wholesalers, retailers, and exporters. Interviewees included representatives from the east and west coasts, the Prairies, Ontario, Quebec and the U.S.A. An interview guide was used during the course of all interviews. It should be noted that during the course of the study the consultants attempted to interview representatives from FFMC, however FFMC representatives declined to participate. Information about FFMC activities was obtained through interviews with other wholesalers and secondary sources.

The consultants also carried out a data base search of a number of commercial databases available through CAN/OLE and CompuServe.

In regarda to the Fisheries Evaluation Phase, the constants used a team of experts to develop eight separate papera - each paper dealing with a different "critical issue" within the industry. In the course of developing the eight papers, the consultants researched fishery development in other jurisdictions and compared approaches taken elsewhere with those in the NW'T; provided a basic conceptual framework of common property analysis and its application to NWT fisheries; analyzed government investment in NWT fishery development and assessed government investments based on market opportunities and

benefits derived; assessed different evaluation systems and applied the Department of Fisheries and Oceans Five Account System to one fishery as an example of a comprehensive evaluation; assessed demand and supply parameters for each NWT fishery; assessed different agencies/departments mandates and identified areas of conflict; and through four separate case studies assessed the importance of local involvement in NWT fishery development.

In the course of developing the eight separate papers, the consultants met extensively with ED&T and DFO officials to discuss results of study findings (meetings were held in Yellowknife, Rankin Inlet and Iqaluit); attended an ED&T/DFO workshop in Cambridge Bay to present an overview of the work program and solicit input from attendants into the issues that the strategy should . address; and traveled to Arviat, Pangnirtung, and Cambridge Bay to meet with local residents involved in fishery development. The papers were then circulated to department officials in headquarters and the regions for comment.

The eight papers developed for comment were titled:

- NWT Fisheries Evaluation Development Issues
- Common Property Resource Management: Implications for Fisheries in the NWT
- Level of Government Support in NWT Fisheries
- Tools and Measures For Fisheries Evaluation
- NWT Fisheries: Supply and Demand Parameters
- NWT Fisheries: Mandates of Government Departments
- NWT Fisheries: Local Involvement case studies
- NWT Fisheries: Synthesis and Analysis

Based on the results of the market research and fisheries evaluation phases, the consultants prepared a strategy report. The report was reviewed by ED&T officials at a workshop held in Hay River in early February 1994. Based on the outcome of the workshop, the strategy was revised and a final strategy report submitted to the department.

Fisheries Overview and Critical Issues

The following section briefly summarizes the historical development of each of the five major NWT fisheries and presents the critical issues affecting each fishery.

Great Slave Lake Fishery

Great Slave Lake opened for commercial fishing in 1945 when a private fish company established a base camp and fishing fleet in the Gros Cap area to fish whitefish and trout. Increased commercial quotas allowed rapid expansion of the commercial fishery and by 1949 Great Slave Lake was the largest single producer of whitefish in North America with seven private fish companies operating during the summer and 13 during the winter.

To protect the lake from localized over fishing Great Slave Lake was divided into four administrative areas with individual quotas in 1949, and these areas have persisted more or less unchanged until today. As the fishery progressed, quotas were periodically adjusted downward according to changes in exploitation and production. Areas fished changed according to profitability and the more remote areas that were not profitable to harvest were abandoned.

The number of private companies involved in the Great Slave Lake fishery peaked in the early 1950's then steadily declined. Four companies were still located in Hay River in 1969 when the Freshwater Fish Marketing Corporation (FFMC) was established and fish sales from the NWT were turned over to the crown corporation.

FFMC has a marketing monopoly over all freshwater fish exported from the NWT and has a mandate to increase returns to fishermen through the orderly marketing of fish and promotion of national and international sales. Since its inception, FFMC's relationship with Great Slave Lake fishermen has been controversial and relations have often been strained.

In 1972 the Great Slave Lake Advisory Committee was formed to provide a forum for local input into the management of the fishery. The Advisory Committee has five members representing the Dene/Metis, four members from the NWT Fishermen's Federation (an organization representing the interests of Great Slave Lake fishermen) and one representative from the private tourism sector representing recreational and sports fishing interests. The committee also has non-voting representatives from the Department of Fisheries and Oceans, Renewable Resources and Economic Development and Tourism. The Committee provides advice and recommendations to DFO regarding licensing, quotas, openings and closures of fishing areas, and recreational fishing quotas. This organization does not have legislated decision making power but it is a formal avenue for public input and an effective and useful forum for co-operative fisheries management.

In 1979 DFO introduced a licensing policy and certificate system on Great Slave Lake which restricts the number of operators on the lake to:

- 28 Summer Class A (whitefish boats) licenses
- 80 Summer Class B (skiffs) licenses
- 32 Winter Class A (Bombardier) licenses and
- 30 Winter Class B (skidoo) licenses.

The Great Slave Lake Advisory Committee recommends who should receive a certificate based on production performance during the previous year and DFO issues the certificates on an annual basis. The certificate system effectively restricts the level of production for each operator by restricting the type of equipment that can be used, thereby restricting potential income. This haa produced a two tiered system of harvesting on the lake with the larger Class A Certificate operators taking 80% of the total annual harvest.

By 1981, the market price for whitefish was too iow to provide a financially viable industry on Great Slave Lake. Therefore the Government of the Northwest Territories, through ED&T, began offering a freight and price subsidy on whitefish to reduce the costs of fishing operations on the lake, thereby increasing fishermen's incomes.

The subsidy was intended as a temporary measure to counter the effects of low market prices, however the subsidy program was entrenched in legislation in 1985 and the subsidy has been required in each subsequent year with parents now exceeding $600,000 annually. The Great Slave Lake fishery, once a profitable market driven industry has become dependent to a large degree on government support and must rely on the political will of the government to continue in its present form.

Total annual production on Great Slave Lake is in the order of 1.65 million kgs with whitefish making up approximately 80 per cent of the harvest. The fishery cams gross revenues of approximately $1.6 million annually and employs approximately 109 licensed fishermen and approximately 200 additional seasonal helpers operating primarily out of Hay River. Total wages and benefits paid to fishermen and helpers is estimated at $888,000 a year. In addition, 23 people are employed in processing.

Most Great Slave Lake fishermen are native men who have been fishing all their lives and many have little or no formal education or training. Thus, even though they live in a community with a greater range of employment opportunities than most NWT communities, they have few employment options and unemployment among this sector of the population is high.

The main issue in the Great Slave Lake fishery is its lack of economic viability. The resource appears to be healthy but the market for whitefish continues to decline and fishing is not Financially viable without high levels of ongoing government support. Great Slave Lake shows the typical characteristics of an exploited common property resource - low returns to fishermen and over-capitalization in the harvesting sector. Moreover, even with government subsidies most operations do not earn enough income to cover costs and replace capital, or to provide even a minimum income to operators. In most cases, the level of government support received by an individual operation exceeds the total wage bill for crew and operators. In addition, most operators cannot replace their capital equipment and are unable to access government support programs such as the Business Development Fund (BDF) or Business Credit Corporation (BCC) because they cannot meet the equity and/or viability requirements.

The fact that Great Slave Lake fishermen continue to fish indicates they gain some benefit from fishing, however the cost to sustain the industry in its present form is high. To make this fishery viable, some tough decisions are required about who will fish and how the fishery should be supported.

Baffin Turbot Fishery

The Baffin turbot fishery was initiated by the GNWT to create local job and income opportunities in Pangnirtung - a community with very high levels of unemployment, a rapidly growing population, and few other opportunities for job and income creation.
The fishery began as an EDA funded exploratory fishery in 1986, in which two Greenland fishermen were brought to Pangnirtung to train eight Baffin fishermen to fish for turbot through the ice using long lines. Over the next two seasons the Baffin fishermen trained other fishermen in Pangnirtung to use the longline fishing gear and, by 1989, the fishery began to operate between February and April as a regular winter fishery.

During the initial period of development, the turbot fishery was sponsored by the Pangnirtung Hunters and Trappers Association (HTA), however major decisions were made largely by GNWT personnel responsible for fishery development.

To encourage more community involvement and local decision making, and to begin linking production to market, it was felt that a locally owned and controlled commercial fishing entity should be established. Based on past experience, it was decided that any new commercial fishing entity should be broadly owned throughout the community therefore community meetings were held to discuss establishing a commercial fishing entityand, in December 1988, Cumberland Sound Fisheries Ltd. (CSFL) was formed.

CSFL was a 100% locally owned and controlled private company that included the Pangnirtung HTA, the Pangnirtung Eskimo Co-op Ltd., P&L Services (a local Inuit owned scallop fishing operation), and 40 other individual residents of Pangnirtung as shareholders. Because the owners of CSFL had limited experience and expertise in running a commercial fishery the company's board of directors was guided by advisors and the board hired an experienced plant manager to run the operation. The board retained final authority on all matters.

Inexperience and poor management led to financial difficulties and in 1990 the fishery was

left facing bankruptcy. At that time the NWT Development Corporation (DevCorp) was asked to invest in the fishery. The DevCorp was chosen as an investment partner because of its policy of divesting shares once a project achieved stability and earned a profit.

In 1992 the NW'T' DevCorp provided a second major investment to the Pangnirtung fishery including construction of a new fish plant and provision of operating subsidies for the first five years of operation allowing the company to carry operating losses while it was implementing a new strategy to diversify. This required incorporation of a new company, Pangnirtung Fisheries Limited (PFL), in which the NWT DevCorp obtained 51% of controlling shares and appointed four of the seven directors to the board thereby assuming majority ownership and effective decision making control over the operation. Cumberland Sound Fisheries, representing local control and involvement, appointed three board members.

PFL operated the 1992 and 1993 fishery and is expected to begin using the new fish plant during the 1994 season.

The Pangnirtung turbot fishery has grown rapidly in terms of both the number of people involved and the volume of fish harvested. In 1992 there were 93 licensed fishermen and each of these fishermen hired a "helper". In addition, there were an average of 22 labourers, a manager and a bookkeeper employed in the processing facility for a total of 210 people employed in the turbot fishery on a seasonal basis.

In 1993, the fishery brought total revenues of $755,012 into the community. In 1992 the average fisherman received a net income of $4,316 for the 21 week season or an average of $206 per week. The average fisherman's helper was paid $2746 for the 21 week season or approximately $130 per week.

Using these average values, fishermen's incomes are well below minimum wage. Assuming fishermen work a standard 40 hour week, 1992 incomes represent an hourly wage of $5.15 for fishermen and $3.25 per hour for fishermen's helpers. Yet, even at these low levels of return the fishery is increasingly popular therefore fishermen must derive some

benefit from the turbot fishery. One important benefit appears to be that income from the fishery contributes to the cost of fishermen's skidoos which are also used for hunting and in-town transportation. It should also be noted that these are only average incomes; some fishermen are able to earn a much higher income.

Plant workers fare better than fishermen in terms of average income. In 1992, $153,147 was paid to plant labourers for an average income of approximately $7,000 per person. Fish plant workers also indicated they enjoyed the regular hours and steady employment provided by the fish plant during the fishing season.

Most Pangnirtung fishermen and plant workers are unilingual Inuktitut speakers with little or no formal education and few options for earning a cash income. The turbot fishery has had a positive impact in the community by providing employment and income to members of the community that would otherwise likely not be employed, although this success is tempered by the fact that monetary return to fishermen is low.

The fishery also appears to make a positive contribution in terms of increasing self-sufficiency in its support of traditional harvesting activities and the reduction of social assistance requirements during the fishing season. The success of the fishery is enhanced by an apparently large stock of fish in close proximity to the community, a strong southern market for turbot with a seasonal price advantage for winter caught fish helping to offset high transportation costs, and good daily transportation lii to southern markets.

However the fishery has not been without its problems and, in terms of increasing local control and decision making, has not been successful. Indeed, since the arrival of the DevCorp, the degree of local control and involvement in decision making has declined sharply.

In addition, the extent of the Pangnirtung turbot fishery resource is not fully understood and it is not clear what level of turbot harvest is sustainable. There is a danger that government initiatives have encouraged people to enter commercial fishing with the expectation they will ail be able to make good money harvesting turbot without regard to

the fact that resource depletion might force government to "put the brakes on" to avoid another East coast disaster. Given the unknown quantity of the resource and limited knowledge of the turbot market, a large investment in a processing plant may be premature and may encourage people to enter the fishery expecting the industry to indefinitely provide a good income to an increasingly large number of people. This level of exploitation may not be biologically or economically sustainable. DFO has initiated stock assessment research in Cumberland Sound to determine which stock the turbot belong to. In the meantime, harvesting will be limited to the current provisional quota of 500 metric tonnes.

Cambridge Bay Char Fisheries

The Cambridge Bay char fishery is unique in the NWT because it is an established fishery, owned and operated by a broadly-based locally owned Co-op independent of the government. The Cambridge Bay char fishery *is also* unique in that it has been able to earn a profit in most years, which is distributed among the community as dividends to Co-op members.

The Cambridge Bay char fishery began in 1965 as a GNWT owned and operated experimental fishery designed to provide an inexpensive source of food for relief issue in the Cambridge Bay area. The Ikaluktutiak Co-op took over the enterprise around 1977 and has been running it since. Under the Co-op's management, commercial char landings have consistently averaged about 45 tomes a year with landed values in excess of $200,000 annually. Cambridge Bay has been the most consistent char producer in the territories and for this reason has been called the most successful of the char fisheries.

The Cambridge Bay fishery operates on a fly-in basis. Fishermen fly out in the spring and travel by boat in the fall to fish camps where they use both gill nets and weirs to capture char on the spring and fall runs. Char is flown from the various fishing sites to the fish plant in Cambridge Bay where it is processed and shipped south, fresh or frozen. The high costs of flying char to the processing plant and problems associated with variable weather conditions frequently result in high costs and supply problems.

The day-today operations of the fishery are overseen by a **manager** who is responsible for all aspects of the fishery. The manager reports to the Co-op Board of Directors elected by Co-op members which include approximately 90% of community residents.

During the 1990/91 season the Cambridge Bay export char fishery provided seasonal employment to 20 fishermen and approximately 12 processors. Gross revenues of almost $300,000 are brought into the community annually and all money from the fishery stays in the community, including the transportation costs from fishing sites to the plant in

Cambridge Bay. Average net incomes to fishermen are low (approximately $1,016 per fisherman), however most of the fishermen are elderly Inuit and the disposable income earned from the fishery allows them to purchase equipment needed to pursue fishing and hunting, a lifestyle that older people enjoy and value. These people have very few alternative sources of disposable cash income.

Until 1992 the Co-op fishery sold its char to FFMC which was, by law, responsible for marketing the catch. However, in 1992 the GNWT negotiated an exemption from the FFMC marketing monopoly for char. It was felt that FFMC was not directing adequate effort and resources to marketing char resulting in low market prices and less than optimum prices for char fishermen. The exemption was granted leaving NWT fisheries free to pursue their own markets. for char, however it also left the Ikaluktutiak Co-op without a char market.

The Co-op appealed to ED&T for marketing assistance and was referred to the NWT DevCorp. However, the Ikaluktutiak Co-op and the NWT DevCorp were unable to reach a satisfactory working relationship. The DevCorp was unwilling to purchase char at the price asked by the Co-op and the Co-op was unwilling to accept the price offered by the DevCorp. Consequently, the Ikaluktutiak Co-op did not fish its char quota in 1992.

The NWT DevCorp has off-to take over the Cambridge Bay Char fishery and build a new processing plant in Cambridge Bay - infrastructure that is badly needed if the Cambridge Bay fishery is to stay in business and diversify its product range. According to the Co-op fishery manager however, the Co-op is not interested in that kind of arrangement because the DevCorp requires controlling shares (5 1%) of the enterprise before it will build the new plant.

Management by a well-established local Co-op has provided stability and continuity to the Cambridge Bay char fishery. The level of success of the Co-op fishery can be seen in its consistently high level of export char production, the level of participation by local community members and the distribution of dividends among Co-op members. The Cambridge Bay fishery has managed to operate for over 20 years without a government

bailout and without requiring large ongoing capital investments or large annual subsidies,

Quotas have been well managed and quality has been improving with the use of weirs in addition to gill nets. The availability of a large stock of char and the willingness of community members to participate in the fishery and to fish in isolated regions have also been identified as critical factors to the success of the fishery. However the future of the fishery is in question, especially if the Co-op is unsuccessful in securing a strong market for its product with prices that will cover costs. If the Co-op's marketing problems are not resolved, it is likely that the fishery will be taken over by another agency. The fishery also requires extensive plant renovations or replacement in the near future if it is to continue meeting DFO export requirements.

Mackenzie Delta Fishery

The Mackenzie Delta test fishery was initiated by the local Hunters and Trappers Committee (HTC) to provide a source of cash income that would allow HTC members who choose to fish, hunt and trap year round buy the necessary supplies to spend the winter at their camps, and the HTC ran the fishery for the first year. However, under the rules governing their charter, an HTC cannot own assets, therefore the operation of the fishery was turned over to the Uummarmiut Development Corporation (uDC), the business arm of the Inuvik Community Corporation. UDC has operated the fishery for the last four years.

The test fishery was a five year project (now completed) and the proponents are hoping that a commercial quota will be assigned allowing further development to take place. The size and extent of fishery resources in the Mackenzie Delta are not known, therefore biological research has formed a major component of the test fishery. The history of commercial fishing in the Delta suggests there may be abundant fish resources but they are not uniformly distributed resulting in the need for detailed resource inventory before any development can take place. It is expected that if a commercial quota is granted, it will be conservative, and similar in size to the current test fishery quota.

The fishery is carried out by fishermen living in camps along the Mackenzie River Delta and in 1992 there were six camps in operation with two to three fishermen at each camp. Fishermen harvest broad whitefish, pike and inconnu using traditional gill nets and keep their catch on ice. Fish are picked up daily by a collector vessel which delivers ice to fishermen and transports fish to Inuvik where it is filleted, frozen and vacuum packed.

In total, the test fishery injects S74,000 in direct wages into the community annually - not including wages earned by local residents hired to assist with biological research. From this amount fishermen received a total of S29,000 providing an average gross income of $2,320 per fisherman and an estimated net seasonal income of $1959, or an average of $653 per week per fisherman. The project also generated approximately S44,000 in 1992

for plant workers and collection vessel crew.

The fishery employs as many as 30 till-time employees during the fishing season, however, the season is only 3 weeks long, therefore total employment created has been low - a combined total of 2.5 PYs* for harvesting, processing and management.

Although the amount of employment created has been very limited, fisheries employment is considered extremely important to those participating. Eight to ten families depend on the fishery as their only source of wage employment. The majority of these people have no formal schooling or training and would otherwise be unemployed. They do, however, own the equipment needed to fish and have the required skills and experience.

The major constraints facing the Mackenzie Delta fishery are limited quotas, high costs and poor markets. The high cost of shipping fish out of the region and the low market price for whitefish has made it impossible to export whitefish south and cover costs. Throughout the course of the test fishery, costs have far exceeded fish sale revenues resulting in high dependency on government (EDA) funding.

Given these constraints, the Mackenzie Delta fishery project is looking at developing alternative markets for fish products. The local Inuvik market is being investigated, however, the market appears limited, both in size and demand, because many residents supply their own fish or are supplied by family members. Work is also progressing on developing a whitefish market in the Yukon where there is apparently a high demand.

This fishery is a good example of local residents and government agencies working closely to reach a common god. Given the developmental nature of the fishery and the principal objective of providing cash income to subsistence harvesters the project has been kept small scale and capital investment relatively low. Fishermen use the same equipment for domestic and commercial harvesting, therefore those involved have not made major capital outlays to participate in the fishery and the skills and expertise required are present in the

* One PY is equivalent to 40 weeks of full time employment.

community.

Test fishery results indicate, however, that commercial fishing in the Mackenzie Delta will not become financially viable without higher available quotas and a higher price for whitefish. Therefore, the market problem must be addressed if the fishery is to be sustainable.

Keewatin Char Fisheries

Commercial char development in the Keewatin region began in the early 1960s as a government initiative aimed at providing employment and a source of food to a population facing serious economic hardship. A government run fish plant was established in Rankin Inlet and local Inuit residents were hired as wage employees to harvest and process fish from the Rankin Inlet area.

The processing facility operated for almost 20 years processing a wide range of fish species and products, but was plagued by a number of serious problems including lack of economic viability and the collapse of the local char population in the Diana River in 1984-85. To keep the commercial fishery operating after the depletion of local stocks, the government turned to other quota areas and individuals in other Keewatin communities were encouraged to commercial fish for sale to the Rankin Inlet plant. This resulted in the formation of active commercial fisheries in Whale Cove, Arviat and Chesterfield Inlet.

Initially, the government had been responsible for organizing and running the fishery, however, in the mid- 1980s, there was a push towards privatization and individual residents and community groups were" encouraged to take over economic *ventures run* by the government. During this period the fisheries in Arviat, Whale Cove and Chesterfield Inlet were turned over to local businesses and organizations with varying degrees of success, although the government still played a very large role in organizing and directing fisheries. Indeed, government, through ED&T, provided the infrastructure and funding for capital equipment, developed the marketing relationship with FFMC, made shipping arrangements for transporting fish to markets, organized fishermen each year, and managed most of the fish plants.

In the late 1980s there waa another shift in policy and the government once again took over the role of planning and implementing economic ventures in high risk renewable resource development projects, including commercial fisheries. As a result, the Arviat fishery became the only private fish business in the Keewatin in a commercial fishery that

was otherwise planned and run by the government.

From that point on, char was harvested in Arviat, Whale Cove. Chesterfield Inlet and to a lesser extent Rankin Inlet, and either shipped directly to FFMC (fresh or frozen) or shipped first to the Rankin Inlet plant for processing and holding, then shipped to FFMC. Char production however, was inconsistent and quality often a problem.

The Keewatin char fishery continued to operate with high levels of support and management from ED&T until 1992 when the NWT DevCorp took over the Keewatin fishery. The corporation is now constructing a new fish plant in Rankin Inlet and has taken over product development and marketing for char products. The corporation has concentrated on producing value added products for sale in the upscale southern market in the belief that the greater return on these products will increase the economic viability of the char fishery - and, ultimately, increase the interest of, and benefits to, local fishermen.

The Keewatin char fishery is carried out by individual fishermen fishing from small wood and canvas canoes using standard gill nets. Inconsistent production levels have always been a problem with the Keewatin fishery and have been attributed to a number of factors including poor weather, poor equipment, distant quotas and low returns to the fishermen which discouraged participation in the fishery. However, production over the past two years has been down and, during the 1993 season, the harvest from all major char producing rivers near southern Keewatin communities was extremely low raising concerns that local char stocks have become seriously depleted. Thus, the state of char stocks has become a important issue in this fishery, particularly since char rivers near southern Keewatin communities are used for both commercial and domestic fishing.

The Keewatin char fisheries provide seasonal employment that may last up to two months each year. Approximately 125 - 150 licensed fishermen participate in the fishery representing approximately 13 per cent of the region's male labour force. There are an additional 12 people working in the Rankin Inlet fish plant. Some of the employees working in the fish plant may eventually secure year-round employment in the processing plant because the plant will be processing both fish and caribou.

The harvesting sector of the Keewatin fishery has never been very well organized and participation can be sporadic with different fishermen participating each year depending on other available employment opportunities. Most of the fishermen are older Inuit with few job opportunities - except for summer construction work which sometimes draws participants away from commercial fishing.

In 1991 it was estimated that gross revenues earned by Keewatin char fishermen totaled approximately $122,000. After expenses this provided a total net income of $89,082 or an average seasonal income of $890 per fisherman. The low average return to fishermen is due to a combination of high harvesting costs and a large number of fishermen harvesting limited quotas, Analysis of harvesting patterns in Arviat indicated that most fishermen made only 2-4 commercial sales before nearby quotas closed, resulting in low per capita incomes. It is likely that the same pattern exists in other Keewatin communities.

In spite of low average income earnings, community members throughout the Keewatin stress the importance of the commercial fishery, particularly for those members of the community that cannot get other jobs. Indeed, commercial fishing is seen as an important source of cash income to cover the costs of subsistence harvesting and it is estimated that at least 50% of the people who participate in commercial fishing do so to offset the costs of maintaining a domestic harvesting lifestyle. Thus, for many Keewatin fishermen commercial fishing is a means of "cross subsidizing" subsistence activities.
The Keewatin char fishery currently uses four separate packing/processing facilities in four different communities making processing costs extremely high. Indeed, in 1993, processing costs far exceeded revenues earned from fish sales. The DevCorp will be making a large capital investment in a meat and fish plant in Rankin Inlet that could be used as a central processing facility, thus reducing fish processing costs.

The Keewatin fishery is plagued by both high costs and serious concerns about resource sustainability. Communities and government agencies must work more closely together and work towards co-management if the commercial fishery is to continue. Choices must be made about whether certain rivers should be designated for either domestic or commercial fishing and clearer regulations are needed to manage the resource. Without

these decisions commercial fishing cannot be sustained, However, these decisions must be made with full community participation, not by government agencies alone.

Principles

Based on the results of the critical review, and discussions with ED&T officials, eight fundamental principles were identified as cornerstones upon which the commercial fishing strategy should be developed.

1. Encourage Industry Efficiency

It was agreed that as a fundamental principle, the GNWT would support commercial fisheries development as a vehicle for economic development in the NWT. Furthermore, the GNWT would support commercial fisheries development as a means of encouraging job and income opportunities for northerners, but not at the complete expense of industry efficiency and viability.

2. **Market** Driven Strategy

It was agreed that the strategy must be built upon realistic market intelligence that would guide NWT commercial fishing development and investment over the next ten years. It was felt that too often in the past government and proponents developed a fishery because there appeared to be an abundant resource near a community and it seemed reasonable to start a fishery as a means of job creation and economic development without adequate regard to whether there were strong and long-term markets for fish products, whether competition was likely to grow, and whether it was really cost effective to undertake development given the inherent market risk. The new strategy should therefore avoid this pitfall and be "market driven".

3. **Maximize Development of the** Domestic **NWT** Market

It was felt that northern communities represent a good potential market for NWT fish products however, this **market** is not currently being served and little attention has been paid to developing and supporting domestic markets for fish products. Moreover, the

development of local markets for fish products is in keeping with the GNWT policy of import substitution. Therefore, it was felt that the strategy should recommend ways and means to maximize development of northern markets.

4. Sustainable Development

It was felt that the strategy must be built upon the principle of long term sustainable development and that any development that compromised this principle should not be undertaken. The need for this principle is most obvious in fisheries that support both a domestic and commercial harvest. Although commercial quotas are set by DFO, there are no restrictions on domestic harvesting, and domestic harvest information is not usually gathered. Therefore, it is very difficult to set commercial quotas that account for the combined effect of commercial and domestic fishing in a common area. The recent decline in South Keewatin commercial harvest levels is evidence of this problem. Thus, it was felt that when commercial fisheries are developed, there must be enough information about stock size and combined domestic and commercial harvesting levels to determine whether resources are adequate to support both harvest, or commercial development should be limited to areas where no domestic fishing occurs or to fish stocks not used for local food.

5. Minimize Government Dependency

It was acknowledged that in future there would likely be less government finding for commercial fishing development available than in the past · or, at best, no increase in available program tiding. A number of factors point to this conclusion: federal and territorial government fiscal restraint is forcing both governments to make program cuts; DFO officials indicated that in "real terms" the department's A-base budget would decrease; and there is growing pressure on the territorial government *to* profile more funding into mining development support - a thrust that would suggest reprofiling finding from other, more traditional economic development support programs into the mining sector. Thus, the strategy should consider ways and means of reducing government dependency and, specifically, the fishing industry's continued and growing need for government finding.

6. Encourage Community Self-Reliance and Control Over Fisheries Development

It was agreed that community self-reliance and control over fishery development are desired elements in successful commercial fishery development. Community self-reliance and control encourages a sense of local ownership in fisheries and the development of local solutions to local problems, rather than dependence on government for solutions - indeed, these elements can be seen in the Cambridge Bay Co-op fishery which, over 20-years, operated the most successful and independent fishery in the NWT. Moreover, encouraging greater self-reliance and control in commercial fisheries is in the spirit of the territorial government's policy of devolution of authority to local governments. However, in many communities, the process of increasing local self-reliance and control will also require developing new skills and abilities. Thus, the strategy should find ways and means of developing the skills needed, and encouraging and supporting greater self-reliance and control over fisheries development.

7. Promote the Use of Appropriate Technology

It was recognized that the introduction of inappropriate technology, or the introduction of new technology without appropriate attention to training, repairs, spare parts etc., could result in a loss of productivity and an overall decline in community well-being. Therefore it was felt that when new fisheries initiatives are considered and when new technologies are introduced, the choice of technology and the manner of its introduction should be appropriate to the physical, cultural and economic environment, and its use should be coordinated with the conditions necessary for its success. Moreover, wherever possible, local technologies should be used or adapted for use and pilot projects should be used to promote transfer of technology and use of infrastructure. New hardware should also be assessed in terms of economic efficiency and effect on employment.

8. Direct Government Investment Into Developing Fisheries and Reduce Government Investment In Mature Fisheries

Since less government funding is likely to be available in future, it was acknowledged that

government should direct investment and support into the developing fisheries and reduce investment in the more mature fisheries. This principle suggests that fisheries need to be rated according to some measure - such as revenues and local income generated per government dollar invested, and/or opportunity for growth - if decisions concerning fisheries support are to be made fairly and equitably. The strategy would therefore have to consider evaluation measures before making recommendations on which fisheries to target for more investment and which fisheries to target for less investment.

9. Improve Coordination by Stakeholders Involved in Fisheries Management and Development

It was generally felt that overall coordination between government and non-government stakeholders in the fisheries was poor which often led to poor planning, disagreement over fishery development objectives and, ultimately, conflicts that could have been prevented with better coordination between stakeholders. There were many examples of lack of coordination leading to conflict in NWT fisheries including: conflict between the Cambridge Bay Co-op and the NWT DevCorp over marketing of arctic char; conflict between DFO and ED&T on commercial quotas in the communities of Gjoa Haven and Taloyoak; and conflict between the DevCorp and the Arviat fish plant owner. Thus, the strategy would have to consider an improved system for stakeholder coordination of the fisheries.

10. Improve Evaluation and Monitoring Systems

Finally, it was felt the strategy would have to recommend the most effective way of evaluating and monitoring fishery development over the long term. The critical review revealed that the lack of a comprehensive and on-going system of evaluation prevented the government from properly evaluating its own fisheries investments. Indeed, over the last five years, only one comprehensive cost and earnings study had been undertaken on one fishery - Great Slave Lake. There was also a lack of agreement between different government departments (DFO and ED&T) on a common system of data collection and fisheries evaluation to institute. However, an effective system of evaluation and

monitoring is required if investment decisions on long term fisheries support are to be made responsibly, in agreement with all players and, ultimately, with accountability to the public. The strategy would therefore have to recommend an effective evaluation and monitoring system.

Supply and Demand Parameters

A successful commercial fishery requires both a resource supply and a market that provides enough revenue to cover all the costs of bringing that resource to market. In the following section we review supply and demand parameters for various NWT fish species and examine investment in NWT fishery developments in light of current market opportunities and availability of supply. This information is required to develop a "market driven" strategy.

Lake Whitefish .

Whitefish is harvested in Great Slave Lake and the Mackenzie Delta test fishery.

Market

The North American whitefish market is estimated to be worth approximately $18 million dollars annually. Of this, the U.S. market accounts for approximately 8070 or $14.6 million a year. Approximately 80% of Canadian whitefish exports are sold to the US market and Canada has exported an average of $10 million worth of whitefish into the USA each year over the past five years.

Whitefish is a commodity product with a well established market, therefore prices are set entirely by supply and demand without regard to the origin of catch. Prices tend to be low during the summer when supply is high and high during the winter when supply is low. Whitefish prices also vary with siie and quality. Generally, the larger the fish, the higher the price it commands. With respect to quality, when whitefish is in ample supply, fish captured will gill nets tend to receive a lower price than whitefish caught in a trap net fishery which yield higher quality fish.

In addition to the seasonal pattern in whitefish prices, average whitefish prices have decreased over the past five years and are expected to continue decreasing. Dealers indicated that 1993 whitefish prices had dropped 15 per cent over the previous year and that low price periods were becoming longer and high price periods were becoming shorter. Average 1993 summer whitefish prices in the American market were US$ 1.32-1.65 per kg for dressed and $2.86- $3.08 per kg for fillets. Average winter prices were US$2.75 -$4.40 per kg for dressed and $5.50-$6.60 per kg. for fillets.

Most whitefish is sold either fresh round or fresh dressed, although demand for high quality fresh fillets is increasing. The major markets for whitefish are the Jewish ethnic markets in large American and Canadian cities, but these markets are declining and dealers are being pressured into finding new market niches.

Quality is the most important factor in the current whitefish market and, as supply continues to grow, quality will become increasingly important.

supply

North America produces over 15,000 *metric* tomes round weight of whitefish per year. Of this, approximately 2,000 tomes of whitefish are harvested from Canadian Great Lakes; 5,000 tomes are harvested from the US commercial fisheries in Great Lakes and surrounding basins; 6,000 tonnes are harvested in areas serviced by FFMC (Alberta, Saskatchewan, Manitoba, N.W. Ontario and the NWT); and 1,000 tonnes are harvested from miscellaneous lakes in southern Ontario.

The NWT is a relatively small whitefish producer accounting for 11 per cent of total annual North American whitefish production (21 per cent of FFMC production) or approximately 1,400 tonnes a year. NWT export whitefish is bested exclusively from Great Slave Lake where whitefish makes up 90 per cent of total landings.

North American whitefish production has increased dramatically over the past fifteen years and there is now a huge glut in the market. Most of the *increase has* come from American

Great Lakes production, but Canadian Great Lakes production has also increased *over* the past *five years,* both in terms of absolute landings and as a percentage of Canadian whitefish landings.

In response to the over supply of whitefish, Manitoba and Saskatchewan have decreased whitefish production. By contrast, NWT production has remained fairly constant. DFO biologists consider the Great Slave Lake whitefish stock to be mature and stable, and at optimum sustainable level of exploitation.

Historically, whitefish prices have been higher in winter due to limited supplies from the Great Lakes and, as a result, NWT fishermen have increased winter production during the past 15 years. Winter production now accounts for about half of total Great Slave Lake annual production.

Although the NWT receives a premium price for whitefish harvested during the winter months, it remains extremely difficult for the NWT to compete with other whitefish producers. Because of market distance Great Slave Lake whitefish are generally perceived to be of lower quality and freshness than Great Lakes whitefish, and the cost of operating in the NWT is higher than in other areas. In addition, the Great Lakes whitefish fisheries are increasingly using trap nets which result in quality that is far superior to gillnet captured fish, making it even more difficult for Great Slave Lake whitefish to compete in the marketplace. It is also expected that winter fishing will increase in the Great Lakes which means that NWT whitefish will have to match Great Lakes quality to maintain winter premium prices.

There is currently no information to suggest that the NWT's export whitefish production can be significantly increased. The Great Slave Lake harvest is stable, and whitefish occurring in many of the smaller lakes within an 80 km radius of Great Slave Lake are too highly parasitized to export.

The NWT whitefish market is therefore considered to be relatively stable at approximately 1,400 metric tonnes a year worth about $1.6 million. It is unlikely that the NWT w-ill be

able to increase its whitefish production level, its market share or the price received for whitefish in the near future. In fact, this revenue is likely to decrease in the near future with falling fish prices and increased competition from suppliers. Even the winter premium on Great Slave Lake fish is likely to be threatened as winter production is expected to increase in the Great Lakes. The NWT should therefore concentrate on improving quality and increasing winter whitefish production if it wishes to maintain its whitefish market share. Moreover, given current market conditions and competition, the NWT should maintain its present relationship with FFMC for the marketing of Great Slave Lake whitefish.

In addition, efforts should also be made to develop new markets for whitefish in the larger northern communities. Specifically, marketing assistance should be provided to develop a market in the Yukon for Mackenzie Delta whitefish (and inconnu) products. Preliminary investigation indicates there is a strong market for whitefish in both Whitehorse and Dawson City - large enough to absorb the entire Mackenzie Delta production of whitefish - and the costs of getting fish to the Yukon market are substantially lower than shipping to other NWT communities or the south. More marketing work is required to develop this market.

It is also believed that a substantial market for Great Slave Lake whitefish exists in Yellowknife, Hay River and other South Slave communities, however, more work is required to develop these markets.

Whitefish market and supply parameters can be summarized as follows:

Fishery	Total Supply	NWT Supply	Market Demand	Price
Whitefish	Increasing	Stable	Decreasing	Decreasing

Investment and development of the two whitefish fisheries (Great Slave Lake and Mackenzie Delta) can be summarized as follows.

Great Slave Lake Investment and Development

AS shown in the table below, Great Slave Lake fishing costs, not including wages paid to crew or operators, consume 90% of the harvest market value leaving little revenue from which to draw wages or provide other net benefits to NWT residents. Over the past four years, the GNWT has provided an average of $692,764 per year in capital assistance and fish subsidies to the Great Slave Lake fishery. For every dollar the government invests, total benefits of $1.28 are received by NWT fishermen in the form of wages. In other words, the government is essentially paying the wage bill for the Great Slave Lake fishery. Clearly, this fishery is no longer market driven but rather is heavily supported by the government to maintain jobs.

Great Slave Lake	Average 1990-94
Total Supply	1,657,200 kg
Average Price	1.11/kg
Annual Market Value	$1,840,200
Total Costs of Harvesting (excluding wages)	$1,645,046
Net Benefits	$195,154
Government Assistance	$692,764
Total Benefits	$887,918
Govt $: Market Value Ratio	1:2.66
Govt $: Total Benefits Ratio	1:1.28

● NOE Sources of data and calculations for each fishery are presented in Appendix 1.

Mackenzie Delta Investment and Development

The following table summarizes average costs and benefits of the Mackenzie Delta Test Fishery. AS shown, total costs of harvesting, exclusive of wages, exceed the revenue earned from fish sales. The government has contributed an average of $97,990 per year over the course of the test fishery to provide total benefits of $71,815 in the form of wages and return to fishermen. This translates into the creation of $0.73 in wages for every dollar invested by the government.

Mackenzie Delta Fishery	Average
Total Supply	25,082 kg
Average Price	1.23/kg
Annual Market Value	$31,201
Total Costs of Harvesting (excluding wages)	$57,376
Net Benefits	($26,175)
Government Assistance	$97,990
Total Benefits .	$71,815
Govt $: Market Value Ratio	1:0.32
Govt $: Total Benefits Ratio	1:0.73

Note: These values **do not include the costs of biological work** or training. Nor do **they include the** value **of government contributions in kind, (e.g. the loan of equipment).**

Arctic Char Fisheries

Arctic char is harvested in the Kitikmeot, Keewatin, and Baffin regions.

Markets

Char is found primarily in remote areas, distant from most markets, resulting in high production costs and therefore high prices. Consequently sales have been restricted to upscale markets and the traditional market for arctic char sold outside the NWT has been the high price white table cloth trade in Central Canada and the eastern US seaboard which accounts for 70 - 80 per cent of char sales. There have also been limited sales to specialty fish shops. Char is a little known fish in southern markets and this lack of product awareness currently limits restaurant and retail sales.

Char has typically been associated with salmon in the market place and sold as a salmon substitute, commanding a price 20- 30% higher than salmon. Salmon is by far the most popular finfish in North America and this association has had a positive impact on consumer acceptance of char. Unfortunately, there is a huge glut of salmon on the market and salmon prices have plummeted over the past two years. The price for char has also fallen accordingly, and it has become increasingly difficult for char to compete with the less expensive salmon.

The North American char market is largely untapped, therefore it is difficult to determine potential market size. Based on a five per cent penetration of the salmon market, the total North American char market is projected to be approximately 1,000 tonnes annually. At an average wholesale price of $9.00 per kg, this market would be worth approximately $9 million. By 1995 the world char market is projected to be approximately 5,000 tomes worth **approximately $45 million.**

Most NWT char is now being sold in eastern and central Canada, although the American market also looks promising given the right marketing and promotion. Japan also

represents a potential market for char, however, the Japanese market requires extremely high standards of quality and consistency, consequently more work is required before the Japanese market can be penetrated. In addition, the Japanese economy is suffering a serious slowdown which has resulted in decreased fish purchases, particularly salmon purchases. This may mean the Japanese market is not as promising as once thought.

NWT char must compete with wild char from Labrador, aquacultured char, and salmon. Labrador char is considered to be of lower quality than NWT char because of its smaller size and paler colour. Aquacultured char, on the other hand, is considered to be of more consistent quality and colour than wild char and, therefore is preferred in the market. The demand for NWT char is currently low because of limited promotion, poor quality, and inconsistent and unreliable supply. It is expected that with improved quality and reliability of supply, new markets for char can be developed in Canada, the US and Japan.

Since the NWT DevCorp assumed responsibility for marketing Keewatin and Baffin char, the corporation has undertaken a number of initiatives to develop a unique market niche for arctic char including:

- reducing the number of wholesalers distributing NWT char and working more closely with selected wholesalers;
- changing the approach used to market char to disassociated arctic char from salmon;
- developing and test marketing a line of high end value added products such as cold-smoked char, char pate, gravlax and portioned char;
- improving quality and product consistency by grading char by colour: Bright reds are used for high-end smoked products, oranges are used for portion packs and fillets targeted to the airline industry, and pales are retort packed and used in gift boxes.

supply

There are three sources of arctic char in Canada: wild char caught in the NWT; wild char caught in Labrador and a small but growing volume of farmed char from southern Canada. The potential Canadian supply of arctic char from all sources, including both wild and farmed char, is estimated to be between 198 and 283 tonnes.

Wild char harvests in Labrador have experienced a decline of almost 70 per cent over the past twelve years from 253 tonnes in 198 I to a low of 80 tomes *in* 1992. This decline is largely attributed to over exploitation of stocks resulting in decreased fish size and decreased returns.

Farmed char is relatively new in the Canadian market and, so far, has shown only limited success and growth. In 1991, between 20 and 38 tonnes of Canadian farmed arctic char were sold. This figure is likely to increase in future as the industry becomes better established, and an annual capacity of 400 tonnes is projected for the near future.

The NWT supplies approximately half of the arctic char currently sold in North America - through its char fisheries in the Kitikmeot, Keewatin and Baffin regions - but over the past ten years NWT char harvests have fluctuated widely. Between 1979 and 1991 Kitikmeot production remained fairly consistent at about 45 tonnes, peaking at 64 tonnes in 1988, however, in 1992 only 21 tonnes of char were harvested. Keewatin production fluctuated between 16 tonnes and 48 tomes between 1988 and 1992, but in 1993 the south Keewatin harvest suffered a drastic decline raising serious concerns about stock viability. Ba5n production has been relatively stable at approximately 45 tonnes a year, although much of this harvest is sold regionally rather than exported. Total exports of NWT char have ranged between 33 and 89 tonnes annually, with a general decline over the last few years because of a combination of poor environmental factors and marketing problems.

This inconsistency of supply is one of the chief complaints from fish dealers who handle char. It is extremely difficult for dealers to find markets for fish if the supply cannot be guaranteed. In some years dealers have made char sales but received no product and, as a

result, they are hesitant to continue dealing with char.

Projections for maintaining future supply of arctic char from Cambridge Bay at current levels is high, but the same cannot be said about the southern Keewatin where stocks may have crashed, or about the Baffin where biological information on many stocks is not current.

In addition, wild char is generally available only during the late summer and fall. Several dealers indicated that the market for char would be vastly improved if the season could be extended. The winter market for char is strong and several dealers felt a winter fishery had good potential, however, the quality of winter caught char has historically been very poor. Fish dealers recommend that quality be improved by finding an alternative to lake frozen *fish* before trying to penetrate the winter market.

In the future, Canadian char is likely to face increased competition from farmed European char, particularity from Iceland and Norway, both of which farm significant amounts of char and have begun exporting into North America.

Arctic char market and supply" parameters can be summarized as follows:

Fishery	Canadian Supply	NWT Supply	Market Demand	Price
Arctic Char	Decreasing	Unstable	Undeveloped, Good Potential	Decreasing

Investment and Development

Development of each of the NWT char fisheries was driven by the need to create jobs or supply food. Char was already being harvested on a subsistence basis, consequently developing a commercial char fishery seemed a logical choice in regions with limited opportunities for commercial economic development: the resource was available, the

required skills and equipment were already present in the communities, and commercial fishing fit in well with local lifestyles. None of the char fisheries developed in response to a strong market demand, in fact, although the market for char shows good potential, it remains relatively undeveloped in spite of more than thirty years of commercial char production. According to FFMC, the small volume of char produced and the inconsistency of supply has not warranted the level of effort required to establish a strong market niche.

The following table summarizes the size and value of NWT arctic char fisheries on an average annual basis over the past four to five years, and the level of government investment and assistance provided to each fishery.

	Cambridge Bay	Keewatin	Baffin	Total
Total Supply	43,082 kgs	32,933 kgs	45,369 kgs	121,384
Average Wholesale Price	$9.89	$9.89	$9.89	$9.89
Market Value	$430,862	$325,578	$448,522	$1,204,962
Total Costs (exclud. wages)	S200,719	$189,648	$180,406	$570,773
Net Benefits	$230,143	$135,930	$268,116	$634,189
Government Assistance	$65,984	S195,562	$115,811	$377,357
Total Benefits	$296,127	S331,492	$383,927	$1,011,546
Govt $: Market Value Ratio	1:6.53	1:1.66	1:3.87	1:3.19
Govt $:Total Benefits Ratio	1:4.49	1:1.69	1:3.32	1:2.68

● For the purposes of this table we have ● aaumad that ● ll of the fisheries would be selling char into the same export *market* for the same average price.

Using this analysis it is clear that the Cambridge Bay and Baffin char fisheries provide substantial benefits. For every dollar the GNWT and EDA has invested in the Cambridge Bay fishery, the community receives $4.49 in wages and benefits. Similarly, for every dollar of government investment in the Baffin char fishery, the region receives wages and benefits of S3.32. The Keewatin fishery only generates $1.69 in benefits for every dollar of government investment, primarily because the fishery produces low volumes of fish and is spread out over a very large geographic area with four individual processing plants, resulting in high costs.

Turbot (Greenland Halibut)

Turbot is harvested in the Baffin region off the coast of Pangnirtung.

Market

The total export market for Canadian turbot was estimated to be approximately five million kgs in 1992, worth $19 million. The US market provides the largest market for Canadian turbot purchasing 32 per cent of Canadian turbot exports, valued at approximately $6 million. The total US market is estimated to be worth approximately $30 million annually and is concentrated in the southern states, Florida and the mid-west. New England also provides a strong market for turbot. The most important product forms in the US market are fresh and frozen fillets.

The second most important export market for Canadian turbot is Asia, particularly Taiwan, which imports approximately $5.7 million worth of whole frozen turbot annually from Canada, accounting for 30 per cent of total Canadian turbot exports. This market is particularly lucrative for vessels that freeze turbot at sea as production costs are low increasing profit margins.

Denmark also represents a large market for Canadian turbot, importing $1.5 million, or 16 per cent, of Canadian turbot exports annually. Turbot sold to Denmark is used primarily for smoking.

The C-domestic market is small, being limited to certain ethnic markets.

The overall market for turbot is strong and increasing. Indeed, many suppliers indicated that demand far outstripped supply and they could sell as much turbot as they could get their hands on.

Turbot prices have remained fairly stable over the past seven years (with fillets averaging

approximately US$5.67/kg) and are expected to increase gradually over the foreseeable future.

In January 1994, the Canadian Association of Fish Exporters (CAFE) predicted that the European market for Canadian turbot will decrease over the next few years because of a general down turn in the European economy. In addition, the European community removed tariffs on turbot imports from Iceland, as of January 1, 1994, which will make it more difficult for Canada turbot, which is still subject to high tariffs, to compete in European markets. CAFE therefore recommends that the best market for turbot is now in North America.

Baffin turbot must compete with other Canadian turbot producers, in particular the Atlantic turbot fishery, and with other world producers including the North Sea, Iceland, and Greenland, all of which produce vast amounts of turbot which are considered superior in quality to NWT turbot. However, the Baffin fishery is prosecuted during the winter, when few other fisheries are in operation, thus, Baffin turbot enjoys strong market acceptance and a price premium during this seasonal window. Once the Atlantic fishery comes into the market it is difficult for Baffin turbot to compete because of higher costs and inferior quality.

supply

Turbot is fished in cold arctic and sub arctic waters around Newfoundland, Labrador, the Gulf of St. Lawrence, the Gaspe Peninsula, Davis Strait and the North Sea. Canada has an annual turbot quota of 67,000 tonnes, but only about 35 per cent of the quota is taken annually. Total Canadian turbot catch increased steadily from 16,600 tonnes in 1988 to 25,556 tonnes in 1992, an increase of 55 per cent.

In 1992, total Atlantic turbot harvests showed a sudden and dramatic drop from 94,900 tonnes in 1992 to 14,200 tonnes in 1993. As a result, recommended Total Allowable Catch (TAC) for 1994 has been decreased to 41,500 tonnes, less than half the 1992 TAC,

and there is serious concern regarding the sustainability of the North Atlantic turbot stocks.

The Baffin turbot fishery is relatively small compared to the rest of Canada. The 1992 Baffin harvest of 430 tonnes is approximately 1.7 per cent of national production. The total turbot allocation for the Baffin is 1,000 tonnes, thus there appears to be room to double current production. However, DFO biologists warn that there are uncertainties about the biology of the Cumberland Sound turbot stock and its ability to support planned expansions, therefore increased production should be approached with caution. DFO stock assessment work is currently being undertaken on the Cumberland Sound stock. In addition, there is concern that, with the decline of the North Atlantic turbot stocks, there may be increased pressure from offshore fishing vessels on the Cumberland Sound stock, affecting the sustainability of domestic turbot supply.

The supply and demand parameters for the turbot fishery can be summarized as follows:

Fishery	Total Supply	NWT Supply	Market Demand	Price
Turbot	Decreasing	Increasing	Increasing	Increasing

Investment and Development

Investment in the Baffin turbot fishery has been driven primarily by the need to create jobs, however, given the growing market and increasing price for turbot, government support and investment in this fishery seems appropriate.

The following table summarizes the size and value of the NWT turbot harvest, the level of government investment and benefits received from the Baffin turbot fishery (1992 figures have been used for analysis).

Baffin Turbot	1992
Total Supply	430,000 kg
Annual Market Value	$1,042,662
Total Costs (exclude. wages)	$987,385
Net Benefits	$55,277
Government Assistance	$498,257
T o t a l Benefits	$553,534
Govt $: Market Value Ratio	1:2.09
Govt $: Total Revenue Ratio	1:1.11

● O@orp capital investment in the processing sector of the Pangnirtung fishery has been spread out over a twenty year estimated plant life span.

At the present level of harvest, the level of government investment seems excessive as for every dollar of government investment, the community receives only $1.11 in wages and benefits. However, DevCorp investment in the Pangnirtung fishery has been made based on the potential for doubling the current harvest level. If turbot harvests eventually reach the full potential harvest of 1,000 tonnes, total benefits to the community are projected to be $1.8 million increasing the Government Investment to Total Benefit Ratio to $3.61. In other words, for each dollar invested by the government the community would receive $3.61 in wages and benefits.

Summary

Supply and Demand Projections

The following table summarizes the market and demand parameters for major NWT fish species.

Fishery	Total Supply	NWT Supply	Market Demand	Price
Whitefish	Increasing	Stable	Decreasing	Decreasing
char	Decreasing	Unstable	Undeveloped, Good Potential	Decreasing
Turbot	Decreasing	Increasing	Increasing	Increasing

The market for whitefish is on the decline and is expected to continue shrinking over the foreseeable future. The North American supply of whitefish, on the other hand, is increasing rapidly resulting in strong competition and decreased prices. All of these factors make it difficult for NWT whitefish to compete and it is likely that returns from the Great Slave Lake and Mackenzie Delta fisheries will continue to fall over the near future.

With respect to arctic char, the market is relatively undeveloped and unknown, but there appears to be good potential for increasing char sales in Southern Canada and the US. The price for char is decreasing - due to a large glut of salmon in the market - and it is becoming more difficult to demand premium prices for char.

With respect to supply, the overall supply of Canadian wild char has decreased due to declining stocks in Labrador, but the supply of farmed char is expected to increase over the near future.

NWT supplies of char have been unstable causing marketing difficulties. The 1993 Keewatin char harvest was very low and there is serious concern that the southern Keewatin stocks may have crashed due to over fishing. The Baffin supply of char has been relatively stable but little is known about the biology of these stocks, therefore, caution is

urged. The Cambridge Bay stocks appear to be stable at current harvest levels.

The market for turbot is strong and growing, and price is expected to rise over the next few years. The North American supply of turbot has suffered a serious decline over the past two years and there is concern about stock viability in the North Atlantic populations, therefore, other turbot producers will likely benefit. There are some concerns about the sustainable level of harvest for the Baffin turbot stock but it is expected that the current level of harvest can be doubled under the current quota system.

Baffin turbot is harvested during the winter when very little fresh turbot is available, therefore it has achieved a high level of market acceptance and commands a seasonal price premium. The high costs of producing Baffin turbot make it uncompetitive outside this seasonal window.

Proposed Marketing Initiatives

Based on current market demand and supply parameters, the following marketing initiatives are recommended:

1. With respect to whitefish and other species harvested in Great Slave Lake, the present marketing arrangements with FFMC should be maintained.

2. With respect to arctic char, the GNWT should lobby for a permanent exemption from the FFMC marketing monopoly for arctic char.

3. The responsibilities of ED&T and the NWT DevCorp should be clarified with respect to marketing. ED&T's role should include conducting market research in support of the industry, but not product development or selling fish. These activities should be the responsibility of the NWT DevCorp.

4. The NWT DevCorp should be instructed to provide marketing services and support, upon request, to all NWT fisheries, not only DevCorp-owned businesses.

5. Develop northern markets for NWT fish products. Specific initiatives should include:

   - developing a policy directing NWT government institutions to purchase NWT fish products;
   - undertaking market research into the supply and demand for NWT fish products throughout the NWT - including northern institutional markets, markets for species not harvested locally, and seasonal markets;
   - providing support to develop a market in the Yukon for Mackenzie Delta products;
   - providing support to develop a market for Great Slave Lake products in Yellowknife, Hay River and other South Slave communities.

Investments

The following table summarizes market value, government investment and benefits for each of the major NWT fisheries.

Fishery	supply (kg)	Market Value	Net Benefits	Annual Gvt. Investment	Total Benefits	Govt S/Market Value	Govt S/Total Benefits
Great Slave Lake	1,657,200	$1,840,200	$195,154	$692,764	S887,918	1.2.66	1:1.28
Mackenzie Delta	25,082	$31,201	($26,175)	$97,990	$71,815	1:0.32	1:0.73
Kitikmeot Char	43,082	S430,662	$230,143	$65,964	$296,127	1:6.53	1:4.49
Keewatin Char	32,933	S325,578	$135,930	$195,%2	S331,492	1:1.66	1:1.69
Baffin Char	45,369	$448,522	$268,116	$115,811	S383,927	1:3.87	1:3.32
Total Char	121,384	$1,204,962	$634, 189	$377,357	$1,011,546	1:3.19	1:2.68
Baffin Turbot	430,000	S1,042,662	S55,277	S498,257	$553,534	1:2.09	1:1.11
Total	2,233,888	$4,119,025	$888,448	S1 ,688,368	S2,524,813	1:2.47	1:1.52

On an average annual basis, approximately $1.67 million dollars in government support and investment is provided directly to these fisheries. This does not include money spent on exploratory and test fisheries for other species or in other areas, offshore fisheries, resource management committee meeting or workshop costs, or aquaculture projects. NWT residents receive an average of approximately $2.5 million dollars in wages and other benefits from these fisheries. In other words, for every dollar invested by the government, NWT residents enjoy $1.52 in wages and benefits.

Great Slave Lake receives the highest level of annual government assistance (42 per cent), 85% of which comes from fish freight subsidies. For every government dollar invested in Great Slave Lake, total benefits of $1.28 are created. This is one of the lowest investment/benefit ratios in the NWT fisheries. Under current market and supply conditions, this ratio is unlikely to improve in the near future.

The Baffin turbot fishery received the second highest level of government support (30 per

cent) however, unlike Great Slave Lake, government assistance in the turbot fishery has been primarily in the form of capital assistance for plant infrastructure. At the level of harvest achieved in 1992/93 the benefits accruing from this investment are low at $1.11 per dollar invested. However, if the present level of investment enables the fishery to double its harvest as projected, benefits will increase to approximately $3.61 for every dollar invested. Under current market conditions, it is expected that the fishery will be able to sell this level of harvest - although obtaining a high enough price to earn a profit on sales is dependent on processing the entire harvest within the seasonal window of higher prices.

Of the three arctic char harvests, the Kitikmeot fishery receives the lowest level of government assistance and provides the highest level of benefits for each dollar of government money. At the other end of the scale the Keewatin fishery receives the highest level of government assistance and provides the lowest level of benefit per dollar invested of all fisheries, including Great Slave Lake. If the three char fisheries are taken together, they receive 23 per cent of government investment and create $3.19 for every dollar invested. This is the highest benefit per dollar invested ratio among the three types of fisheries.

The Mackenzie Delta fishery is by far the smallest fishery in the NWT in terms of market value. Production costs are high - far exceeding the revenues earned by the fishery - therefore the need for government assistance has been high. Some of these costs can be attributed to the developmental nature of the test fishery, however, under current market and supply constraints, it is highly unlikely that this fishery will ever be able to generate enough revenue to cover costs. At present harvest levels, the fishery receives 6 per cent of government assistance and provides $0.73 in wages and benefits for every dollar invested by the government.

Conclusion

Of all fisheries, the Kitikmeot char fishery attains the highest benefit from government investment and, assuming marketing support is provided, can likely continue to be a successful fishery. Thus the fishery should be considered as the most promising fishery for government investment.

Although providing a relatively low benefit from government investment, the Pangnirtung fishery does offer the advantage of having a strong winter niche market, thus should also be considered as a promising fishery for investment.

The Keewatin char fishery should receive little investment until such time as biological assessment work has been undertaken and confirmation obtained that stock levels can support continued commercial and subsistence harvest.

The Great Slave Lake fishery receives the highest level of government investment yet generates one of the lowest benefits. As well, the fishery has poor market potential, although there may be opportunity for more local market sales. Given the poor outlook in the fishery, government investment should be reduced.

The Mackenzie Delta fishery has very low level of benefits and poor market potential therefore should receive little investment in commercial fishery development.

Strategy Elements

1. Develop and Introduce New NWT Commercial Fishing Support Policy.

The first and most critical element of the strategy is the development and implementation of a new comprehensive NWT Commercial Fishing Support Policy with clear goals and objectives, a clear definition of ED&T's role in NWT commercial fishery development, and a comprehensive support program.

Goals and objectives should be based on the principles outlined in the beginning of this report, and the department's role. in commercial fishing development clearly outlined to include planning, coordination% program support, monitoring and evaluation - but not direct industry development such as marketing fish products for producers, resource management and assessment, or operating test fisheries. These tasks would be left for other government and non-government industry players to undertake.

The new commercial fishing support program would:

- correct the inherent inequity of the current fish freight subsidy program
- reallocate finds from mature fisheries into developing fisheries.
- redirect the fish freight subsidy to support the more efficient producers.
- will encourage and reward northern value-added processing
- include the department's intersettlement trade policy to encourage continued commercial sales of fish product between communities

Given fishermen's inability to access conventional business support programs such as CAEDS, the Business Development Fund (BDF), and the Business Credit Corporation (BCC), the new policy would also include a capital contribution program.

Impacts of the new policy would include:

- a more equitable distribution of limited government dollars among the fisheries;
- increased availability of capital assistance for fishermen
- increased operation efficiency
- a shift in focus to a market driven rather than supply driven industry

Policy changes and impacts are explained in more detail in the Policy Requirements section of this document.

2. **Integrate Commercial Fishing Support Policy With Other Fishery Support Policies - Specifically Policies Addressing The Needs Of The Off-Shore Fishery And Domestic Fishery. Also Integrate New Policy With Revised Economic Development Strategy**

The department needs to integrate the new Commercial Fishing Support Policy with new policies that address the needs of the off-shore fishery and domestic fishery. In the case of the offshore fishery, developments in the Baffin shrimp fishery, and other potential off-shore fisheries, need to be addressed if long-term opportunities are to be realized. In addition, given the decline in North Atlantic turbot stocks, there is concern that offshore fishing for turbot will increase off the Baffin coast, possibly compromising the viability of the Cumberland Sound turbot population. The department should therefore work with DFO and other stakeholders to develop an Offshore Fishery Support policy and, in particular, the Minister of Economic Development should send a letter to the Minister of Fisheries and Oceans requesting that domestic turbot supplies be protected, and that no other turbot licenses be granted, until the biology of the Cumberland Sound turbot is understood.

In the case of the subsistence fishery, introduction of a new Commercial Fishing Support Policy may mean that some smaller operators will no longer receive the fish freight subsidy (e.g. Great Slave Lake B class fishermen) and may no longer be able to use commercial

fishing as a means of "cross- subsidizing" subsistence fishing. Renewable Resources are considering developing a Harvest Support Program for the western arctic and Nunavut Tunngavik Inc. (NTI) are currently developing a harvest support program for the eastern arctic, therefore the department should work closely with both groups to ensure that any new Harvest Support Program complements the department's new Commercial Fishing Support Policy. In addition, the Minister of ED&T should send a letter to the Minister of Renewable Resources requesting a Harvester's Support Program be developed - including support for subsistence scale fishermen - and, in the meantime, those small-scale fishermen who no longer qualify for ED&T commercial fishing programs be supported through Renewable Resources programs available to hunters and trappers.

As well, the department should integrate the new Commercial Fishing Support Policy into a revised ED&T Economic Development Strategy that clearly outlines the department's goals and objectives, role, support programs and anticipated benefits, sector by sector, so that anticipated "bang for buck" is clearly articulated. A revised department economic development strategy would be a means of showing northerners how commercial fishing "fits" into broader economic development objectives of the department.

3. **Maximize Development of Northern Markets for NWT Fish Products**

The domestic market for NWT fish products is not being well seined, yet, in spite of its relatively small size, the northern market offers several advantages including lower shipping costs, lower competition, and a willingness to pay higher prices. In addition, developing the northern market is in keeping with the GNWT policy of import substitution. Before the northern market can be fully developed, more information is required about the demand for fish products in northern communities. Therefore, as a fist step, ED&T would undertake a comprehensive assessment of northern supply and demand parameters for NWT fish products, funded by the EDA. In the meantime, ED&T would provide support to develop the two northern markets already identified, specifically the Yukon market for Mackenzie Delta fish products, and the South Slave market for Great Slave Lake products.

In addition, ED&T would develop a policy directing GNWT institutions to purchase NWT fish products.

4. **Make Better Use of the NWT Development Corporation's Marketing Function To Market All NWT Fish Species**

Confusion over the role of various agencies with respect to marketing NWT fish products has resulted in a number of conflicts and overlaps. To encourage the orderly marketing of NWT fish products and to maximize returns to NWT residents the Minister of Economic Development and Tourism will instruct the NWT DevCorp to provide marketing services for all NWT fish species (other than Great Slave Lake export species) and for all NWT fisheries upon request, without necessarily taking an ownership position.

The Minister of ED&T would also instruct the DevCorp to expand the corporation's marketing efforts within the NWT and to work closely with ED&T to maximize development of the northern domestic market. ED&T would be responsible for undertaking market research in support of the industry and identifying opportunities; the DevCorp would be responsible for co-ordinating supply and demand for all species within the NWT', selling fish products outside the NWT (including the Yukon), and supporting local marketing initiatives, upon request, without requiring an ownership position. The DevCorp would be further instructed to develop a business plan for fish marketing in the NWT and submit the plan to the Minister of ED&T.

5. **Lobby DFO for Individual Transferable Quota (ITQ) System for Pangnirtung and Great Slave Lake fisheries.**

The critical review of NWT fisheries revealed that, in most cases, the common property nature of NWT fisheries results in low returns to fishermen and over-capitalization in the harvesting sector. To remedy this problem and improve the viability of commercial fishing operations, ED&T would lobby DFO for an Individual Transferable Quota (ITQ) system.

Under an ITQ system, each fisherman is allocated an individual quota which is a portion of

the total lake or species quota. Each fisherman knows that their share of the catch cannot be taken by other fishermen, therefore there is no need to over-capitalize to compete. ITQs can be used, sold, rented or transferred, therefore fishermen who wish to expand their operations can purchase additional quota from other ITQ holders.

ITQs are used throughout the world, including southern Canada, to stabilize fishing effort and reduce the costs of harvesting fish. Experience has shown that sales of ITQs can quite quickly lead to a reduced fleet size and increased generation of resource rents. A further advantage of ITQs is that quota holders can sell their quota and take some equity out of a common property resource when they leave. Moreover, the holders of multiple or larger quotas can make larger profits and have stable earnings.

Given the advantages of ITQs, the department would lobby DFO to introduce an ITQ system in the Great Slave Lake and the Pangnirtung Turbot fisheries. Since responsibility for resource allocation in Pangnirtung will be transferred to the Nunavut Wildlife Management Board (and likely passed on to the local HTA) and responsibility for resource management in Great Slave Lake may involve similar co-operative management boards rising out of land claims, ED&T should work closely with DFO and Renewable Resources to develop educational materials, and to hold community and regional workshops about ITQs so that these agencies will understand the ITQ option and be able to make an informed decision about introducing an ITQ system.

ITQs would be a less useful management system for the arctic char fisheries because most commercial char fisheries are small and would only provide economically viable ITQs for a very few people. In addition, most char is harvested using equipment already owned by domestic fishermen and it is rare for fishermen to purchase or upgrade their equipment to compete in the char fishery. Thus overcapitalization is a less serious problem in these fisheries.

6. **Encourage More Local Control And Management Of NWT fisheries; Lobby CEIC and Arctic College To Provide Management and Board of Directors Training**

Through the new policy and lobbying of other agencies, the department would actively encourage and support more local control and management of NWT fisheries. This would include supporting local groups who have already demonstrated sound management in fisheries development. Thus, the department would support the Cambridge Bay Co-op in its request to renovate and expand the Co-op owned fish plant. The department would also lobby the DevCorp to provide marketing support to the Co-op.

In addition, the department would lobby CEIC and Arctic College to develop and deliver management training and Board of Directors training to local groups involved in fisheries, thereby encouraging local groups to take on more control and responsibility in fisheries by providing the required skills. In the case of the Pangnirtung Fisheries, local board members would be encouraged to take these training programs as an effective means of assuming more direct control in the fisheries, rather than simply relying on the DevCorp and appointed managers to manage and operate the fisheries.

7. **Support More Biological Assessment Work In Critical Areas Of Fishery Development-**

There are at least three priority areas where more biological assessment work is required. The first is the Pangnirtung Turbot fishery where it is unclear whether the fish harvested come from a local Cumberland Sound population or from a larger Davis Strait population. This issue needs to be clarified because if the Pangnirtung fish are part of the Davis Strait stock, the combined impact on the stock from all license holders could be considerable. This would not be the case if the population is a discrete, local stock, since Pangnirtung Fisheries is the only license holder in this area.

The second priority area for assessment work is the South Keewatin where Arctic char harvests have declined dramatically and it not clear whether this is simply a cyclical pattern

or, in fact, a serious depletion of overall arctic char populations with long-term impacts for both commercial and domestic harvesting. As well, there are areas in the North Keewatin where quotas have been assigned in the absence of any biological knowledge. With the decline in South Keewatin stocks there will likely be increasing pressure to develop these areas. No new development should take place before adequate stock assessment is completed thus the North Keewatin should also be a priority area for assessment work.

The third area includes the Kitikmeot communities of Gjoa Haven and Taloyoak where DFO and ED&T disagree over present quota levels and larger quotas are needed to make commercial fishing economically viable.

As part of the strategy, the department would, therefore, strongly and actively support more biological assessment work in the three critical areas by lobbying DFO to undertake assessment work, and using EDA funds to support assessment work and/or test fisheries.

8. **Minimize Conflicts With Domestic Fisheries By Supporting** A Policy of No **Commercial Fishing Development/Investment Expansion In Areas of High Domestic Use Where The Domestic Harvest Is Not Quantified.**

The consequences of low arctic char harvests in the South Keewatin are potentially very serious including a loss of commercial fishing employment opportunities and earnings and, more importantly, the potential loss of arctic char as a source of food - the repercussions of which would include higher reliance on southern imported foods, higher living costs throughout the affected communities, and higher reliance on government social assistance to meet higher living costs. There is also potential for significant criticism from community residents that government departments and agencies encouraged commercial fishing without fully knowing the impact that combined subsistence and commercial harvests would have on stock levels.

To avoid these dangers the department should support a "no commercial fishing development/investment expansion policy in areas of high domestic use, until domestic fishing harvest levels are known and it is confirmed that the resource can safely support

both commercial and subsistence harvests - there cannot be increased investment in development without increased investment in resource management and assessment. Multiple sources of finding would be used to support this research including EDA and DFO. The Department of ED&T would lobby DFO and Renewable Resources to undertake more effective domestic harvest surveys, and would lobby to have EDA funds for test fisheries reprofiled into resource assessment. In addition, stock assessment would be identified as a top priority for future EDA finding.

9. Improve Data Collection and Evaluation Systems

Data collection for NWT fisheries has been, at best, sporadic. Indeed only one NWT fishery, Great Slave Lake, has had a comprehensive cost and earnings study completed in the last five years. Cost and earnings information has been collected on a more limited basis for the Pangnirtung turbot fishery and a cost and earnings study was also carried out for Arviat and Whale Cove in 1988 but is now out of date. Income and employment data is also scarce for most NWT fisheries - indeed, there is little data available on the proportion of individual income that comes from fishing, or the importance of fishing income relative to other sources of total community income. Stakeholder surveys are also required on a regular basis to determine what direction stakeholders think fisheries should take and to help set priorities. To date, no stakeholder surveys have been completed.

Data must be collected on a regular basis to provide valid and reliable information therefore ED&T, DFO and Renewable Resources should jointly undertake required data collection including cost and earning studies every three years; and income and employment data collection and stakeholder surveys annually. This information should be compiled and up-dated on a shared ED&T/DFO/Renewable Resources database.

In addition to the lack of data, no comprehensive evaluation of NWT fisheries has ever been undertaken - indeed, the recently completed critical review of fisheries was the first in-depth review of NWT fisheries ever undertaken. As weU, the EDA evaluation (including Fisheries Program evaluation) should have commenced one year ago so that managers would have the information required to make decisions about reprofiling funds

between programs, however the evaluation has yet to start.

ED&T and DFO should, therefore, jointly undertake a program of ongoing evaluation of the fisheries, in particular, for the Great Slave Lake and Pangnirtung fisheries where there is significant government investment and high expectations for income and job opportunities from fishery development. Moreover, the DFO "Five Account" system of evaluation should be used in evaluating NWT fisheries since the system is endorsed by DFO, allows a multi-objective evaluation, and provides a means of dealing with conflicts between various sectors and different objectives in a rational manner, recognizing the necessary trade-offs.

For more details regarding evaluation, see the Evaluation Monitoring and Co-ordination section.

10. Improve Industry Coordination, Planning, Monitoring And Conflict Resolution By Building On Existing EDA Structure.

NWT fisheries suffer from a general lack of coordinated planning and management. As a result different agencies often work at cross purposes and conflicts emerge between various stakeholders. A coordinated approach to fisheries development would decrease overlap in agency initiatives and reduce inter-agency andstakeholder conflict by providing a forum for communication and co-operation.

To improve industry coordination, planning, monitoring and conflict resolution the structure of the EDA Fisheries Management Committee should be expanded to include representatives from the NWT DevCorp, fishermen's associations, and Co-operative Management Boards, and the Committee's role enhanced to include overall responsibility for industry co-ordination, monitoring and evaluation. The structure of this co-ordinating mechanism, and its responsibilities are detailed in the Evaluation, Monitoring and Co-ordination section of the strategy report.

11. Consult With Stakeholders To Obtain Support For, And Ownership In, The New Commercial Fishing Strategy.

The department needs to obtain broad stakeholder support for the commercial fishing strategy if ownership in the strategy is to be obtained. This is particularly important since, in the past, stakeholders have often not been consulted on government fishery development plans and initiatives, rather consultation has been "after the fact". Those groups and individuals that should be consulted include other government agencies (DFO, Renewable Resources, Culture, Education and Employment, NWT DevCorp, EDA Fisheries Sub-committees), Co-operative Management Boards and Advisory Committees, and representatives of the private sector including fishermen's associations, HTAs, Ikaluktutiak Co-op, Uummarmiut Development Corp, Pangnirtung Fisheries Ltd., and other groups involved in fisheries development.

More detail on the proposed consultation program is found in the Consultation section of this report.

12. Consolidate Investments, Ensure Alternative Support Programs For Subsistence Harvesters, And Explore Limited New Opportunities

Finally, a threshold of knowledge been gained through the exploratory fisheries work carried out under the last two EDAs, therefore, in future, fisheries investment can focus on developing identified opportunities rather than searching for new resources. Thus, the department would encourage stakeholders to consolidate investments in areas of greatest opportunity such as the Cambridge Bay and Pangnirtung fisheries. As well, the department would ensure that those small scale harvesters who rely on commercial fishing as a means of cross subsidizing subsistence fishing receive assistance under alternative, yet to be developed, Harvest Support Programs. New opportunities for fishery expansion would be developed in areas where there are strong markets for fishery products, identified community support, and there is a good likelihood of economic viability.

Investment and Sources of Funding

There are essentially four kinds of government investment in commercial fisheries development:

1. investment in the physical infrastructure necessary to support fishing, such as harbours and docks;
2. investment in improvements in the productive capacity of a fishery (e.g., stock assessments, test fisheries and other kinds of research);
3. investment in improvements in the productive capacity of a fishing fleet (e.g., financial assistance for boats, motors, nets, etc.); and
4. direct investment in jobs (e.g., freight subsidies and other price support mechanisms).

Characteristics of Past Government Investment

In the last five years (1988-93) the territorial and federal governments have invested a considerable amount in all four types of support for commercial fisheries development in the NWT. Funding has included:

- Department of Economic Development and Tourism (ED&T) freight subsidies;
- ED&T contributions to fishermen for the purchase of boats and motors, gill nets and other equipment;
- ED&T contributions to fish buyers for feasibility studies and/or to expand fish plants;
- Economic Development Agreement (EDA) contributions to conduct test fisheries;
- Department of Fisheries and Oceans (DFO) allocations for the provision of inspection services, economic analysis, hydrography, physical/chemical science

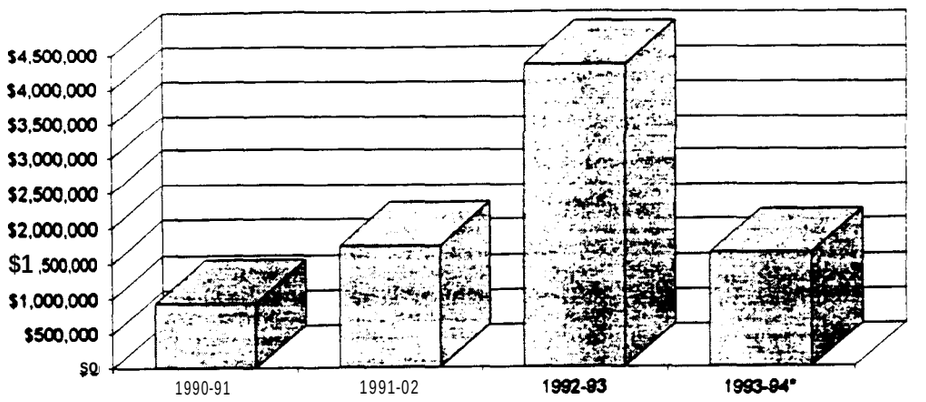
research, biological research, fisheries habitat management, and capital support to expand Or improve infrastructure such as docks and small craft harbours; and more recently,

- investments by the NWT Development Corporation (DevCorp) to establish fish plants in Rankin Inlet and Pangnirtung that have created (at least in the case of the Pangnirtung fish plant) new and expanded markets for fish products.

In regards to DFO, department officials have indicated that from 1987 to 1992 DFO investment in NWT fishery development, as measured by the department's average annual operating and capital budgets, have been respectively $5 million and $574,000 per annum or a total of almost $5.6 million per annum. The same officials also indicated that although DFO operating and capital budgets appear constant this masks a general trend of declining A-base budgets that are, and have been, the principal source of finding for DFO services in support of NWT fishery development. Officials believe that with current federal government fiscal restraint measures it is likely that DFO will have less funding available and cost-recovery mechanisms will become the pattern for future NWT fishery support.

In contrast, other government sources including ED&T's fish freight subsidy and Business Development Fund, EDA and DevCorp have collectively increased their annual investment in support of fishery development in the N'WT. As shown below, in 1990/91 government investment from these four sources totaled about $1 million, then increased in 1991/92 to $1.8 million and in 1992/93 to $4.4 million. Although 1993/94 investment is shown as $1.6 million, this does not include DevCorp investment or monies not yet committed under the Business Development Fund for fisheries development.

NWT Fisheries: Level of Funding by Year (1990-1994)



If we add average annual DFO A-base and capital budgets ($5.6 million per annum) and support from the above four government sources ($2.2 million), then total government investment in support of commercial fishing in the NWT has been an average of $7.8 million per annum over the last four years.

The estimated amount of government investment does not include:

- government O&M expenditures for staff assigned to commercial fishing development;
- Renewable Resources staff involved in investigating fish stock biology, gathering harvest statistics and surveillance; or
- services provided by the Departments of Municipal and Community Affairs and Public Works and Government Services, which in the past have usually not charged for fish plant water disposal and utility costs.

If these costs are added an additional $1 million or more could be added to the estimated total government investment in fishery development in the NWT.

Focus of Government Investment

The focus of government programs and services in support of NWT fishery development can broadly be divided into two areas: DFO programs and services which are targeted at management, regulation and resource assessment; and other government programs and services which are targeted at commercial development. Accepting these two broad divisions allows us to identify a number of trends.

First, since DFO accounts for about 71% of total government investment in support of the fisheries, we can safely say that government investment is heavily concentrated in the areas of management, regulation and resource assessment as opposed to commercial development of the fisheries. In light of the importance of fish as a food source for NWT residents and the need to ensure a sustainable on-going fish resource this is a necessary concentration of government investment.

Second, government programs in support of commercial fisheries development (essentially all those programs excluding DFO) are concentrated through two agencies (DevCorp and EDA) and limited initiatives (test fisheries, fish plants in Pangnirtung and Rankin Inlet). Indeed, the DevCorp and EDA accounted for 68% of all government finding targeted towards commercial development of NWT fisheries.

Third, conventional business support programs such as the BDF and CAEDS are utilized to a much lesser extent than other programs by NWT fisheries and in the case of CAEDS, not at all. This suggests that commercial fishermen cannot meet BDF and CAEDS equity requirements or tests for viability.

Finally, government funding in support of commercial development of NWT fisheries is heavily concentrated in the Baffin region and to a lesser extent in two other regions: Keewatin and North Slave. The following table summarizes the distribution of government finding (excluding DFO) by region:

Distribution of Government Funding by Region

Region	% of Funding
Baffin	44
Inuvik	5
Keewatin	23
South Slave	25
Kitikmeot	3

A closer examination of the focus of government investment in fisheries development reveals the following:

Department of Fisheries and Oceans: *As* mentioned above, the primary focus of DFO programs and services is in the areas of management, regulation and resource assessment support of NWT fishery development. They also provide inspection services, economic analysis, hydrography, physical/chemical science research, biological research, the department's Fisheries Habitat Management Division (FHMD), and consultation and coordination with territorial and other federal agencies that administer fisheries development programs. As well, DFO delivers the Fishing Vessel Insurance Program which provides insurance coverage to protect fishermen's capital investments from accidental loss, and the Small Craft Harbour Program which allows the department to cost share in building, expanding or renovating docks and small craft harbours for both recreational and commercial fisheries. In the NWT the Small Craft Harbour program has been used to fund Great Slave Lake receiving stations.

DFO services and programs are provided to existing fisheries free of charge but services to new fisheries including test fisheries and stock assessment are provided on a cost recovery basis.

DFO has an average of 108 PYs of employment in support of NWT fisheries from its A-base and other externally funded programs. The department's average annual budget for

NWT fisheries has been $5 million for O&M expenditures and $574,000 for capital expenditures. The department's budget and person year allotment are heavily concentrated in the areas of FHMD and biological science which together account for 8 1% of total person year allotment, 69% of O&M expenditures and 54% of capital expenditures.

Economic Development and Tourism: In fisheries development, ED&T's primary focus is to create employment and income opportunities for NWT residents. In doing so, over the last two decades the department has served as proponent, financial supporter, implementing agency and coordinator for fisheries projects. Fisheries development has dominated the department's efforts in commercial renewable resource activities.

The department's major initiatives in support of fisheries development have included:

- establishing a Renewable Resource division within the department with officers located in headquarters and regions;
- introducing a Commercial Renewable Resource Use Policy with specific provision for commercial fishing freight subsidies;
- introducing a cost-shared EDA with extensive fishery support; and to a lesser extent,
- supporting fisheries development through various loan and contributions programs such as the Business Credit Corporation (BCC) and Business Development Fund (BDF).

The Fish Freight Subsidy Program is designed to increase the competitiveness of NWT fishermen by offsetting the high production and freight costs associated with operating fisheries in the north. The program aims at bringing the net returns of NWT fishermen in liie with those of their southern Canadian counterparts. Over the last four years (1990-1994) ED&T has provided about $2.4 million in freight subsidies to NWT fisheries, a figure which represents 27% of GNWT investment in fisheries development. (It could be argued that freight subsidies and other price support mechanisms are more of the nature of industry *maintenance* programming rather than development programming, but this distinction is ignored for the purposes of investigating overall government investment in

NWT fisheries.)

Eligibility for fish freight subsidies is restricted to active licensed commercial fishermen who are NWT residents and operate financially marginal freshwater and anadromous fishing enterprises. Accordingly, the program is targeted at four fisheries in the NWT: the Great Slave Lake Fishery (GSLF); other Inland Fisheries; the Export Arctic Char Fishery; and the Intersettlement Trade Fishery.

Individual commercial fishermen are the primary focus of program. However rather than distributing this money to individuals, the money is often paid to fish plants, allowing fish plants to increase the price paid to fishermen.

Although the Cumberland Sound marine turbot fishery has received fish freight subsidies since 1989, eligibility criteria under the program have yet to be amended to allow the inclusion of turbot.

ED&T introduced the Business Development Fund (BDF) in 1991 to consolidate its existing mix of business contribution programs. At the time of consolidation the Commercial Renewable Resource Use Policy was included in the BDF; however the department's fish freight subsidy (previously a part of the Commercial Renewable Resource Use Policy) was not included, but kept as a separate and distinct program.

The BDF was designed primarily to support small business development in the less developed communities of the NWT with attached schedules to meet specific needs of businesses at different stages in the business cycle. Contributions under the BDF are not provided if the applicant can secure a reasonable rate of return on investment without assistance. Nor are contributions provided if market disruption is likely to occur. There is also an equity requirement under the program which, in the less developed communities, is either 5% or 10'??o of project costs, and in the more developed communities, including Hay River and YellowMe, 20% of project costs.

BDF finding under Schedule A - Opportunity Identification and Research - has been used

to find test fisheries, product testing and feasibility studies, and Schedule B - Business Creation, Expansion or Investment - has been used to purchase boats, nets, fish tubs, net haulers and winter fishery equipment. In comparison to other sources of finding the BDF has provided relatively little finding for fisheries development. Indeed, the BDF accounted for only 5% of GNWT finding in fisheries. The main reason for the low level of BDF investment is that most commercial fishermen have low levels of income. Therefore, fishermen have difficulty meeting equity requirements and showing overall business viability, at least as conventionally defined. The 20% equity requirement for residents of Hay River has made accessing the BDF particularly difficult for Great Slave Lake fishermen.

The Business Credit Corporation (BCC) was established as a crown corporation to operate as a "lender of last resort" and provide business loans, debt financing and contract security (e.g. bonding) for companies unable to obtain commercial financing, or where commercial banks are unavailable. The BCC, however, demands significant equity investment from an applicant, demonstration that the applicant will operate a viable business and pay back the BCC loan, and extensive security in the form of personal guarantees, fixed and floating charge debentures and other chattels. A business plan with financial forecasts is also usually required as part of a BCC application, particularly on any relatively large loan application (e.g. over $20,000). As such, the program is targeted to those who have the wherewithal to finance a business and those who can provide the required business plan. Given BCC lending criteria, very few commercial fishermen have used the program. For example, in the three regions that comprise Nunavut (Baffin, Keewatin and Kitikmeot), only three loans totaling $120,000 have been issued since 1991 for the purchase of fishing vessels and equipment.

Economic Development Agreement (EDA): Since 1983, there have been three federal-territorial cost-shared Economic Development Agreements (EDAs). The first EDA was a $21 million agreement, the second a $39 million agreement, and the third and current EDA (1991-1996) a $50 million agreement. All EDAs have been used by both governments as a means of stimulating economic growth in the NWT and improving coordination and economic cooperation between both levels of government.

With the current $50 million EDA the federal government provides 70% of funds and the territorial government 30% of finds. Under the agreement there are three cooperative agreements and within each cooperative agreement a number of initiatives including one initiative for fisheries development with a five-year budget of $5 million.

The EDA fisheries initiative is targeted at making the NWT commercial fishing industry viable and sustainable over the long term. Activities that are funded include:

- assessing the potential of underutilized marine and inland fish stocks that would support economically viable and sustainable fisheries;
- implementing pilot projects to determine the logistics, economics and technical feasibility of winter fishing for char and whitefish in Eastern and Central Arctic water bodies and open water whitefish in the Mackenzie Delta and lakes north of Great Slave Lake;
- undertaking gear testing, demonstration projects, and training fishermen and plant workers; and
- conducting market research and development.

The largest percentage of the EDA fisheries budget is allocated to stock assessments, an important concentration if sustainable fishery development is to be assured over the long term. Overall, the EDA accounted for 3 5°/0 of government funding in fisheries development in the NWT during the last four years.

Although there has been some criticism about the overall complexity of the EDA, administration and delivery of fisheries initiatives have been relatively streamlined and efficient - at least according to interviews with government representatives who sit on the EDA Fishery Management Committee, a group tasked with overseeing the fisheries initiative. Administration involves ED&T as the implementing party with delivery decentralized from the Management Committee to Regional Fisheries Management Sub-Committees. In turn, the Regional Sub-Committees are responsible for developing annual consultation plans, annual work plans, decision-making on proposals, monitoring funded projects and progress reports. Representation on the Regional Sub-Committees consist of

one representative from each of ED&T, Renewable Resources, DFO, and DIAND and two private sector representatives. ED&T and DIAND co-chair the Sub-Committees.

One major concern with the EDA is that the DevCorp is not represented on either the EDA Sub- Committees or Management Committee. This means that a major investor in fisheries development in the NWT is not involved in decisions that ultimately have direct and indirect impacts on corporation fisheries investments.

Canadian Aboriginal Economic Development Strategy (CAEDS): In 1989 the federal government introduced CAEDS as a joint initiative coordinating the economic development work of Industry, Science and Technology Canada (ISTC), Indian and Northern Affairs (DIAND), and Employment and Immigration Canada (CEIC). The key goal of the strategy is to provide long-term employment and business opportunities to Aboriginal Canadians by giving them the means to effectively manage their own business enterprises, economic institutions, job training and skills development. The various programs under CAEDS are administered by the three federal departments.

In regards to fishery development in the NWT, the consultants were not able to identify any business support finding provided to any of the fisheries through CAEDS. Like the BDF and BCC, the main reason for the lack of CAEDS investment in the fisheries might be that commercial fishermen cannot meet CAEDS equity or viability requirements.

NWT Development Corporation (DevCorp): In 1990, the GNWT established the NWT Development Corporation (DevCorp) as a Crown Corporation with four main objectives: to create jobs and income primarily in small communities; stimulate growth of businesses; promote economic diversification and stability; and promote the economic objectives of the GNWT.

The DevCorp has invested in two fish plants (Pangnirtung and Rankin Inlet) for a total of $2.95 million. The DevCorp's investment accounted for 33% of GNWT funding in fisheries development for the 1990-94 period.

The following table summarizes major GNWT investment in commercial fisheries development for the period 1990-91 to the present (1993-94 to November 30, 1993):

GNWT Investment in Commercial Fisheries Development
1990/91 to Present

Funding Agency	1990/91		1991/92		1992/93		1993/94		Totals	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Freight Subsidy Pgm	767,039	75	667,160	37	714,877	16	316,000	19	2,466,206	28
BDF	0	0	155,690	9	202,588	5	73,584	4	431,878	5
EDA	0	0	383,675	21	1,421,169	32	1,249,859	76	3,054,756	34
NWT Dev Corp	250,000	25	590,000	33	2,115,000	47	0	0	2,956,198	33
TOTAL	1,017,039	100	1,796,525	100	4,453,634	100	1,639,443	100	8,906,941	100

Future Investment Plans

Some estimates of the amount of anticipated future government investment and/or the amount available for investment in commercial fisheries development were provided to the consultants during the course of this study, and are presented in the following table: These projections do not include funds required to increase industry co-ordination or evaluation. Nor do they include additional funds required by the NWT DevCorp to develop a marketing strategy and provide marketing support to expand the domestic market for NWT fish products.

Proposed GNWT Investment in Commercial Fisheries Development
by Funding Agency and Project
16S4/66 to 1996/97

Funding Agency	Project	3-Year Budget
EDA	Mackenzie Delta Whitefish	100,000
	Baffin Turbot and Char	1,037,000
	Hudson Bay Fisheries	200,000
	Keewatin Char	80,000
	Kitikmeot Char	60,000
	Great Slave Lake	125,000
	Subtotal	1,671,000
ED&T	Mackenzie Delta Whitefish	50,000
	Baffin Turbot and Char - Capital	192,000
	Baffin Turbot and Char - Op Subsidies	720,000
	Hudson Bay Fisheries	200,000
	Keewatin Char - Capital	105,000
	Keewatin Char - Op Subsidies	280,000
	Kitikmeot Char - Capital	105,000
	Kitikmeot Char - Op Subsidies	280,000
	Great Slave Lake - Capital	120,000
	Great Slave Lake - Op Subsidies	400,000
	Fisheries Strategy Consultation	50,000
	Fisheries Development & Evaluation	105,000
	Subtotal	**2,817,000**
NWT DevCorp	Mackenzie Delta Whitefish	50,000
	Baffin Turbot and Char - Capital	4,287,000
	Baffin Turbot and Char - Op Subsidies	1,200,000
	Keewatin Char - Capital*	1,713,000
	Keewatin Char - Op Subsidies	1,200,000
	Kitikmeot Char - Capital	1,200,000
	Kitikmeot Char - Op Subsidies	1,200,000
	Subtotal	**9,449,000**
TOTAL		13,937,000

Note: It is difficult to separate investments in the Baffin turbot fishery from investments in Baffin char, because the major proposal in that region - a new processing plant in Pangnirtung - will be used for both species. Thus, 'Baffin Turbot and Char' includes the Cumberland Sound turbot fishery, and char fisheries centred in Pangnirtung, Broughton Island, and Igloolik. ● Similarly, the estimate for DevCorp capital investment in the Keewatin is for a combined meet and fish processing plant. It is difficult to separate the portion of investment that would apply to fish only.

Estimates are based on consultation with ED&T, NWT DevCorp and EDA and may be subject to change.

The preceding table is restated below in terms of specific fisheries:

Proposed GNWT Investment in Commercial Fisheries Development by Fishery
1994/95 to 1996/97

Fishery	3-Year Budget
Mackenzie Delta Whitefish	200,000
Baffin Turbot and Char	7,729,000
Hudson Bay Fisheries	466,000
Keewatin Char	2,214,000
Kitikmeot Char	2,083,000
Great Slave Lake	1,145,000
Headquarters	100,000
Total	$13,937,000

As the figures in the above tables demonstrate, GNWT departments and agencies plan for significant increases in investment in commercial fisheries development, from $8.9 million for the 4-year period 1990/91 to 1993/94, to $13.9 million for the 3-year period 1994/95 to 1996/97.

It" must be stressed, however, that $9,250,000- 66% of the planned $13,937,000 - comprises one-time capital expenditures. Following the 1996/97 fiscal year, capital expenditures will likely fall back to whatever is minimally required to "maintain facilities and equipment, and undertake stock assessments and test fisheries.

Even more significantly, the figures indicate a distinct shift away from investment in the Great Slave Lake fisheries and towards the turbot and char fisheries of the Eastern Arctic, particular those on Baffin Island.

The rationale for this shift is very much grounded in the realities of the respective fisheries:

- The Great Slave Lake fisheries - and particularly the summer fishery - are *mature* fisheries, characterized by too many operators using old and inefficient equipment to harvest whitefish stocks in excess of market requirements.

- The Baffin turbot and char fisheries, on the other hand, are *young, innovating* fisheries characterized by opportunities for growth in 3 areas: the total number of operators, the amount of harvesting equipment employed, and market demand for product.

It is small wonder then, that GNWT departments and agencies plan to shift the focus of investment to fisheries where opportunities for growth exist. The main vehicle for accomplishing this will be - as noted in the above table - through the capital investment plans of the NWT Development Corporation.

Great Slave Lake fishermen will not be abandoned, as the smaller operators would probably be eligible for assistance under the Department of Renewable Resources' proposed Wildlife Harvesters Assistance Program. But the focus of investment in the Great Slave Lake fisheries will shift from across-the-board freight and price support subsidies to encouraging fewer, more efficient operators to harvest optimum levels of whitefish stocks. Any funds freed up through this process will be diverted to direct support of turbot and char fisheries. The main vehicle for accomplishing this will be through changes in policy.

Policy Requirements

ED&T provides direct support to the fishing industry through its freight subsidy program designed to off-set the high costs of moving fish to market. The program is ostensibly based on need, but criteria to assess need have never been established and cost and earnings surveys for the various fisheries receiving subsidies have either not been updated or have never been done.

The fish freight subsidy program is not equally applied across the NWT and among the various fisheries. Great Slave Lake receives the bulk of subsidy dollars to support a fishery which realizes low market returns relative to the turbot and some of the char fisheries. On Great Slave Lake, the subsidy program has become institutionalized - the program has no mechanism to determine need and no means of determining benefits.

The turbot fishery is following the same path as Great Slave Lake. The turbot fishery is demanding increased subsidies, yet no effort has been made to encourage efficiencies in the processing and harvesting sectors. Herein lies the problem: freight subsidies become a crutch and discourage efficient operations.

Therefore, a more universal policy is proposed for application across the NW'T. This program is not tied to freight rates, but recognizes that other costs can also be higher for northern fisheries. The policy should provide for three programs:

- an operational subsidy program,
- an intersettlement trade program, and
- a capital contribution program.

1. Operational Subsidy

A subsidy will be provided to offset total costs in fisheries where market demand will create significant benefits to NWT residents. The subsidy will be provided where total costs exceed total revenues. However, various conditions and restrictions will limit the amount of finding available to any fishery.

The subsidy will be aimed directly at harvesters; however, the program design will target commercial producers rather than subsistence level producers.

The following provisions are proposed for the new program:

1. **The subsidy will apply to all species of fish.** Under the current program, turbot are excluded. The new program will include all fish harvested for commercial sale.

2. The subsidy will **encourage and reward northern value added processing.** The level of subsidy will be based on the market value of the catch as received by the fish plant. Thus, where plants increase the market value of fish through processing, fishermen will receive a higher level of operating subsidy. To help stabilize income received by fishermen, the operating subsidy will be calculated using the average market value received over the previous three years.

3. The subsidy will **not exceed 25%** of the market value of the catch. In the case of the Great Slave Lake fishery, the market value is deemed to be the FFMC'S posted price FOB Winnipeg. In the case of the char and turbot fisheries, the market value is the value of the catch as received by fish plants In the case of budget restrictions, this subsidy rate (25%) may be adjusted downward and total available funds distributed at an equal rate across all qualifying fisheries. In addition, a cost and earnings survey will be conducted every three years for each fishery to monitor the financial status of each fishery receiving subsidy contributions. Adjustments to the subsidy rate may be contingent on the results of this survey.

4. Subsidy payments will **be issued to fishermen in two payments, at the beginning and at the end of the season.** This provision allows fishermen access to start up capital at the beginning of the season and minimizes the risk to the program from fishermen who may not fish after receiving the first payment.

5. Advances **will be calculated as 50% of the average subsidy earned during the previous three seasons.** New entrants into the fishery will receive an advance calculated as 50°A of the subsidy that would be payable on an amount equal to the average catch in the fishery in the preceding year. Final payments will be calculated on the basis of current season production, less the advance. Those who do not have landings sufficient to cover the advance will be required to repay the "unearned" portion.

   Because the Great Slave Lake fishery comprises both a summer and a winter season, advances will be based not on the total subsidy earned during the previous *year*, but rather, on the total subsidy earned during the previous *season*. That is, advances for the summer fishery will be based on subsidies paid the previous summer, and advances for the winter fishery will be based on subsidies paid the previous winter.

6. **Other grants and contributions for operating costs will affect the amount of subsidy available under this program. The** subsidy paid to an individual fisherman or plant under this program will be directly reduced by any amount received for ***operating costs*** by any other finding agency. For example, if a fish plant receives an operating subsidy from the DevCorp, the market value upon which the subsidy is based will be reduced by the value of the DevCorp subsidy. Loans, grants and contributions for ***capital costs*** will generally not affect the amount of subsidy paid.

Application of the operational subsidy will depend on whether it is applied to a mature fishery - such as Great Slave Lake -or a developing fishery. Each of these applications are described below.

Operational Subsidy for Great Slave Lake

Most mature fisheries suffer from the characteristic symptoms of a common property resource - too many fishermen chasing too few fish. Great Slave Lake is a good example of this problem. Therefore, in the case of mature fisheries, the operational subsidy will be used to encourage industry efficiency at the harvesters level. Accordingly, in Great Slave Lake, assistance will be provided only to those fishermen whose average production over the last three years has been at least 50% of the industry average over that period. For the Great Slave Lake fishery, this computes to the following initial limits below which subsidy assistance will *not* be provided:

1994/95 Winter Fishery:	7,500 Kg.
1995 Summer Fishery	15,000 Kg.

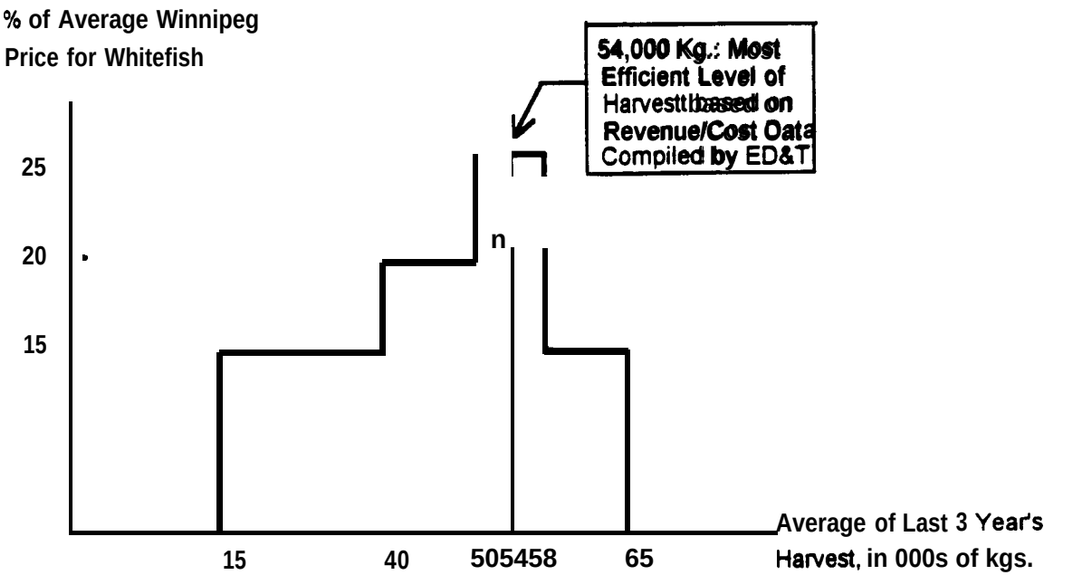
In addition, an upper limit should exist beyond which subsidies would not be paid. For the last few seasons, no single fishermen has caught more than 150% of the average catch. As an upper limit, this works out to about 65,000 Kg.

These provisions are intended' to encourage efficiency in the fishery and focus the program on commercial harvesters as opposed to subsistence harvesters. However, this provision would *not* be applied if ITQs were put in place.

Two models have been developed for the Great Slave Lake fishery - one for the summer fishery and one for the winter fishery. Each model is described below.

Great Slave Lake Summer Fishery Operational Subsidy Model

Model for Calculating Subsidy Payments
Great Slave Lake Summer Whitefish Fishery



The most distinguishing feature of this model is the "stepped" approach to subsidy payments:

- Any fishermen whose average catch of whitefish over the last 3 seasons was less than 15,000 Kg. will receive no subsidy payment. This is essentially all of the B-class fishermen, although 2-3 B-class fishermen can harvest this level (and slightly more) in a good season
- Fishermen whose current season catch is between 15,000 and 40,000 Kg. will receive 15% of the posted Winnipeg whitefish price for each Kg. as a subsidy. (About 10-11 of the 15 active A-class licenses fall in this category.)

- Fishermen whose current season catch is between 40,000 Kg. and 50,000 Kg. will receive:
  a) 15% of the posted Winnipeg whitefish price for each Kg. to 40,000; and
  b) 20% of the posted Winnipeg whitefish price for each Kg. over 40,000.
- Fishermen whose current season catch is between 50,000 Kg. and 58,000 Kg. will receive:
  a) 15% of the posted Winnipeg whitefish price for each Kg. to 40,000;
  b) 20% of the posted Winnipeg whitefish price for each Kg. between 40,000 and 50,000; and
  c) 25% (the maximum) of the posted Winnipeg whitefish price for each Kg. above 50,000.
- Fishermen whose current season catch is in excess of 58,000 Kg. will receive:
  a) 15% of the posted Winnipeg whitefish price for each Kg. to 40,000;
  b) 20% of the posted Winnipeg whitefish price for each Kg. between 40,000 and 50,000;
  c) 25% (the maximum) of the posted Winnipeg whitefish price for each Kg. between 50,000 and 58,000; and
  d) 15% of the posted Winnipeg whitefish price for each Kg. to 65,000.
- Any landings in excess of 65,000 Kg. will not be subsidized.

The rationale for this model is based on revenue/cost data collected and analyzed by ED&T officials, which suggest that the optimal level of harvest for an A-class fisherman is 54,000 Kg. At that level, ail fixed costs can be covered, and the difference between marginal revenue and marginal variable costs is maximized. Thus, the stepped approach encourages A-class fishermen to increase their production by whatever means (e.g., pooling of effort, more days of effort, and/or more efficient harvesting equipment) to this level, in order to maximize the amount of subsidy received. This is particularly true of the 10-11 A-class fishermen whose annual catch is between 15,000 and 40,000 Kg. This volume is really insufficient to sustain a viable commercial operation.

At the same time, any catch in excess of 65,000 Kg. need not be subsidized: anybody

catching this much fish is doing so because marginal revenue exceeds marginal costs, providing a small profit for the operator.

If this model had been used to determine subsidy payments to Great Slave Lake fishermen during the summer of 1992, it is estimated that about $249,894 would have been available for reallocation to other fisheries, as shown in the following table:

Effect of This Model on 1992 Subsidy Payments

	Estimated Actual	Proposed Model	Difference
Number Receiving Payments	61	15	↓
Total Payout	$347,853	$97,959	$$249,8:
Average Payout	$5,703	$s,530	↑ $827
Maximum Payout	$37,689	$13,152	↓ $24,537

This total potential saving of $249,894 is based on the actual volumes delivered to FFMC at an average 1992 whitefish price of $1.20 Kg. FOB Winnipeg. Assuming that this price does not change, the maximum payout that might be required if all 15 operators were besting 54,000 Kg. is easily calculated:

Calculation of Maximum Subsidy Payout
Assuming a Winnipeg Price of $1.20 Kg. and 15 Operators Each Harvesting 54,000 Kg.

step	Payout Calculation	Payout
15,000 to 40,000 Kg	40,000 kg x $0.18 x 15	$108,000
40,000 to 50,000 Kg	10,000 kg x $0.24 x 15	38,000
50,000 to 54,000 Kg	4,000 kg x $0.30 x 15	18,000
Total		$162,000

Thus, if the policy objective of encouraging all of the active A-class fishermen to harvest at the optimal level of 54,000 Kg. was achieved, the program would still only cost $162,000 in subsidies.

One further aspect of the proposed model deserves consideration and that is the potential impact on the subsidy received by individual fishermen. The following table shows the average change in individual payouts, based on the "step" at which fishermen were operating in the summer of 1992:

Calculation of Impact of Model on Individual 1992 Catches
Based on an Average Subsidy of 6S.4 Cents per Kg.

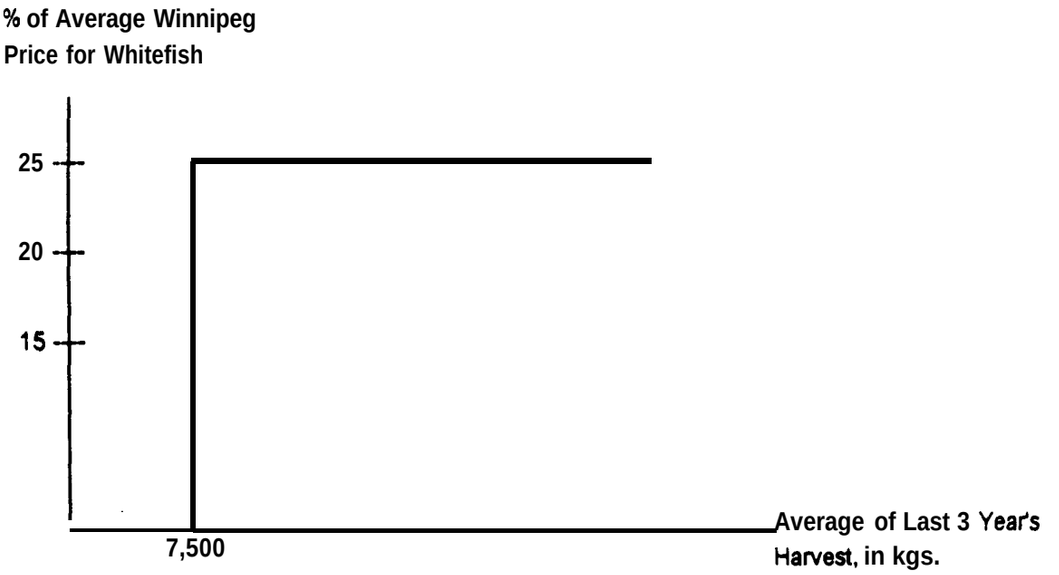
	Step			
	16,000- 40,000	40,000- 50,000	60,000-66,000	58,000 - 65,000
Number of Fishermen	10	3	1	1
Average Catch	26,875 Kg	46,850 Kg	51,000 Kg	64,400 Kg
Average Subsidy Rec'd	$15,964	$27,830	330,300	$37,689
Subsidy based on Model	4,83a	9,255	9,900	13,152
Difference	↓ $11,12s	$$18,575	$$20,400	$$24,537

The 10 fishermen currently harvesting between 15,000 and 40,000 Kg. will receive an average "hit" of $11,000. The 3 fishermen harvesting between 40,000 and 50,000 Kg. will receive a much bigger average hit of $18,575. As a counter measure, these fishermen could be given easier access to capital assistance to upgrade their equipment, thereby becoming more efficient (and receiving a greater proportion of total subsidy dollars).

To reduce the negative impact of the new subsidy restrictions, the new policy would be phased in over a period of three years. In the fist year, all fishermen would receive a maximum of 25 per cent of the market value of their catch, up to the upper limit of 65,000 kgs. Anything over 65,000 kgs will not receive the subsidy. Over the next two years the lower minimum of 5,000 kg would be instituted and the "steps" would be put into place.

Great Slave Lake Winter Fishery Operational Subsidy Model

Model for Calculating Subsidy Payments
Great Slave Lake Winter Fishery



The only feature that this Winter fishery model shares with the Summer fishery model is a lower limit, estimated on the basis of 50°A of average 1990-92 catches as 7,500 Kg. No upper limit is proposed, nor does this model feature "steps": all landings in excess of 7,500 Kg. would receive a subsidy calculated as 25°/0 of the Winnipeg price.

For example, during the 1990/91 winter fishery, the average Winnipeg price was $1.74 per kg., and the average subsidy was $0.21 per kg. Under these proposed revisions, the winter subsidy would have increased to $0.435 - a figure which is 25°A of the

Winnipeg price, but also more than double the current subsidy. The rationale for this is that the costs of operating in the winter are significantly higher, that past subsidies were insufficient to cover even a portion of costs, and there is indications in the revenue/cost data that an optimally efficient harvest point does not exist. Further, FFMC has always paid a premium for winter-caught whitefish (as much as 70% more than the summer price, in the case of January-March deliveries). Thus, encouraging more effort in the winter fishery is consistent with the market-driven principle of this strategy.

The impact of this model on the 1990/91 Winter fishery (the last season for which comprehensive statistics are available) is shown in the following table:

Effect of This Model on 1990/91 Subsidy Payments

	Estimated Actual	Proposed Model	Difference
Number Receiving Payments	38		↓ 22
Total Payout	$100,035	$157,9:	↑ $57,865
Average Payout	$2,633	$9,8s9	↑ $7,236
Maximum Payout	$12,000	$24,850	↑ $12,850

Note: Although 38 fishermen reported catches during the 1990/91 fishery, many of these 38 were in fact "pooled" efforts of one or more fishermen. The number of certificates issued to licensed fishermen for that season was closer to 65.

Thus, although fewer fishermen benefit from the program - 16 as opposed to 38- the average subsidy increases significantly, from $2,633 to $9,869. The benefits to all fishermen remaining in the fishery would increase substantially. This would be consistent with overall policy objectives.

In the event that future costs/earnings surveys indicated that the winter whitefish fishery had indeed increased in efficiency, a step system or cap similar in structure to that proposed for the summer fishery could be imposed.

Operational Subsidies for all other Fisheries

Unlike Great Slave Lake, all other NWT fisheries can be classified as developing fisheries. Therefore, a different approach has been taken to the operational subsidy. Application of the subsidy would be flexible with decisions made at the regional level by the expanded regional EDA fisheries management committee (described later in this report). The management committee may chose to provide the subsidy to all fishermen, or to introduce a minimum harvest level below which no subsidy would apply. The committee can also choose to provide the subsidy directly to fishermen or to provide the money to the fish plant to be passed onto fishermen in the form of better fish prices. However the subsidy is administered, the maximum subsidy payable remains at 25 per cent of market price and the payment must be made visible.

As was noted for the Great Slave Lake winter fishery, in the event that costs/earnings surveys indicated that a fishery had increased in efficiency, a step system or cap could be imposed.

2. Intersettlement Trade Subsidy

The current intersettlement trade subsidy program serves to encourage commercial sales of fish between communities in the Northwest Territories. Under this program, freight costs are offset by 500A. However, the following modifications are proposed:

- the subsidy will only apply where fish is consumed within the NWT
- no contributions will be made to a single individual or firm where the total annual transaction involves under 500 kilograms of fish unless the regional management committee chooses to set a lower threshold to encourage development of the industry. Lower limit thresholds maybe phased in as the industry develops; and
- applications for subsidy must be made annually.

3. Capital Contribution Program

A new program is not proposed. Rather, changes to the eligibility requirements of the Business Development Fund are proposed, in order to make the BDF more accessible to the fisheries sector.

Difficulties in accessing contribution funds from the BDF for fisheries businesses and fisheries projects are generally attributed to the unprofitable nature of the sector as a whole, and the risk associated with individual fishing operations. It is also true that contributions which have been made to inefficient producers have exacerbated the problem of over-capitalization and negligible profits on Great Slave Lake. Nevertheless, many fishermen cannot earn enough to replace their capital. The task is to develop a program that targets efficient producers who do not generate enough cash flow to adequately replace their equipment and other capital items.

The following program elements are proposed:

1. Fishermen must be eligible to receive the operating subsidy in order to be eligible to apply for a capital contribution.

2. The maximum amount that will be awarded to any single fisherman or fisheries project is $75,000. Normally, assistance will be provided on a one-time basis only.

3. An applicant for capital assistance will be required to provide equity at least equal to 50% of the average annual subsidy received. Years in which no subsidy is paid will not be included in the calculation. That is, the total amount of subsidy received to date will be divided by the number of years in which subsidies were actually earned in order to arrive at the average annual subsidy received.

Impacts and Benefits

Great Slave Lake

The previous proposals to revise the freight subsidy program included a discussion of the impacts on the Great Slave Lake fisheries. These impacts are reproduced in the following table:

Summary of Impacts On Great Slave Lake Fisheries Arising from Proposed Policy Changes (Based on 1991 Data)

	Estimated Actual	Proposed	Difference
Summer Fishery:			
Number Receiving Payments	61	15	↓ 46
Total Payout	$347,853	$97,959	↓$249,894
Winter Fishery:			
Number Receiving Payments	38	16	↓ 22
Total Payout	$100,035	$157,900	↑ $57,865
Other Fisheries:	17,300	17,300	0
Totals	466,188	273,1S9	1192,029

Note: The estimated total reduction in the number of operators fishing Great Slave Lake is 48, not 48+22. The summer and winter fisheries do not comprise different groups of people: all of the licence holders that take part in the winter fishery also fish in the summer.

Each of the 15 active A-class fishermen normally employ 3 helpers during each of the summer and winter seasons, for a total of 60 jobs. Based on figures contained in the 1991 *Great Slave Lake Fishery Survey*, the annual wage bill plus owner's draw for these 60 jobs was about $633,700[1]. This translates to 52.8 PYs, using the BDFs wage-to-PY conversion factor of$12,000 per PY.

[1] *Great Slave Lake Fishery Survey: Overall Results,* prepared by the GNWT Bureau of Statistics, 1991.

52.8 PYs would continue in place under the proposed revisions. It is unlikely that more jobs would become available, because the intent of the policy is to encourage greater *efficiency*, which can be taken to mean increased production per existing unit of effort (i.e., per job). Because there are fewer, more efficient operators left in the fishery, average profit before taxes but after government subsidies should increase from $3,577 to $10,185, a 185% increase[2]. More efficient operations provide greater assurance that the remaining jobs would be maintained in the long run, without the need for increasing levels of government assistance.

Although the table on the preceding page might suggest that there are 46 active B-class fishermen (61 minus 15), the actual number of B-class fishermen is closer to 65, because many B-class operators pool their catches. As for the number of PYs represented in the B-class fishery, it is considerably less. Again using figures from the 1991 ***Great Slave Lake Fishery Survey,*** it is estimated that the annual wage bill plus owner's draw was about $236,300. This translates into 19.7 PYs.

Even though these 65 B-class operators would not be eligible for any subsidy, ideally there would be a "safety net" to protect these operators. For example, the proposed Wildlife Harvesters Assistance Program could provide both capital and operating subsidies which would allow these fishermen to carry on a traditional lifestyle on the lake. Thus, the 19.7 PYs represented by the smallest operators may not be lost - responsibility for supporting them is merely transferred to a more appropriate finding source.

Revising the Subsidy Program means that about $192,029 would be available (at least in terms of the 1990/91 and 1992 scenarios presented above) for reallocation to other fisheries.

[2] Ibid. 1991.

Mackenzie Delta Whitefish Fishery

The Mackenzie Delta fishery provides between 20 and 30 short-term seasonal jobs each year. This is only equivalent to about 2 PYs based on 40 weeks of work. This past season (summer of 1993) there were five active camps with two to three fishermen per camp. A collector vessel, with a crew of two, made one trip a day from Inuvik to each of the camps bringing in ice and bringing out iced fish. The processing plant is located in Inuvik and employs eight local people. There is also a manager and bookkeeper, both local Inuvik residents. In addition, it is hoped that one person will be assigned to product marketing for three months after all the fish is processed and packaged.

Mackenzie Delta fishermen currently receive a price for fish which makes their operations profitable. However, some of the processing plant costs are currently assumed by the EDA. If all plant costs were passed on to fishermen to the extent that a price reduction resulted in unprofitable operations, an additional demand of $7,700 per year would be expected from the Fish Freight Subsidy Program. Proposed EDA capital contributions to this fishery are estimated to be on the order of $83,400 over the next 3 years. This money will likely be used for fish plant operational improvements, and will have little impact on employment levels.

Employment is expected to remain at current levels if a commercial fishing quota is granted, however there may be further employment opportunities if value-added products such as smoked fish, and local retail sales are pursued.

While the fishery has been successful in employing as many as 30 employees working full-time during each fishing season, the season is only 3 weeks long therefore total employment provided has been low. Expressed as PYs (based on 40 weeks of work) the fishery provides only 2.5 PYs for combined harvesting, processing, and management. If a marketing person was hired for 3 months, PYs would increase to 2.8.

Baffin Turbot Fishery

The Pangnirtung turbot fishery has grown rapidly in terms of both the number of people involved and the volume of fish harvested. Over the four year period from 1989 to 1992, commercial fish landings increased from 125,490 Kg. to 340,200 Kg., an increase of 171%.

In 1992, there were 93 licensed fishermen involved in the turbot fishery and each of these fishermen hired a helper. In addition, there were an average of 22 labourers, a manager and a bookkeeper employed in the processing facility for a total of210 people employed in the turbot fishery. However, the employment offered by the turbot fishery is seasonal; in 1991 the fishing season lasted 12 "weeks. In 1992 participation increased and the season was extended to 21 weeks. With these changes the turbot fishery is estimated to have provided about 20 PYs for fishermen and their helpers, and 15 PYs in the processing facility and management.

In terms of income, approximately half the fishermen earned gross revenues of under $5,000 during the 1992 season, 23 per cent made between $5,000 and $10,000 and 21 per cent earned over $10,000 in gross earnings. The Pangnirtung Economic Development Officer has estimated the average fisherman's gross income to be $15,030 for the 1992 season. However, fishermen must cover the costs of their operations before receiving any personal income therefore net income is a more appropriate measure of benefit to the fishermen.

Using costs and earnings calculated for an average Pangnirtung fisherman (Ashley 1993) it is estimated that in 1992 the average fisherman received a net income of $4,316 for the 21 week season or an average of $206 per week, The average fisherman's helper was paid $2746 for the 21 week season or approximately $130 per week.

The DevCorp's proposed capital investment of $3.8 million in facilities construction and upgrading (to process both turbot and char), combined with operating subsidies of an

average $481,000 per year from all sources, are projected to increase employment levels substantiality. According to DevCorp officials, this level of investment should increase employment to 78.1 PYs in harvesting and 42.4 PYs in the plant. About 15 of the increase in harvesting PYs will accrue to the community of Broughton Island: the DevCorp plans to develop this fishery by using a collector vessel to transport turbot (and char) to the new plant in Pangnirtung.

Baffin Char Fisheries

Char fisheries take place mainly in the winter time in the following communities: Pangnirtung, Iqaluit, Hall Beach, Igloolik, Arctic Bay, and Clyde River.

Information available from ED&T records(Eggers 1992) indicate that during the 1990/91 season, the Baffin char fisheries provided about $121,000 of income for 160 fishermen, an average of about $756 per fisherman. (Note that of this 160, about 100 are from Pangnirtung and also fish for turbot.) Given the short nature of the season, the 160 positions translates to about 10 PYs.

Apart from the construction of a new processing plant in Pangnirtung which will be used for both turbot and char, future capital investments in the Baffin char fisheries consist of a possible S500,000 receiving plant in Igloolik funded by the DevCorp, and about $132,000 from ED&T for equipment upgrading and replacement. The end result of this investment is an increase of 5-8 fishermen in Igloolik, which translates into about ½PY.

Unlike the turbot fishery, commercial char fishing in the Baffin is not seen as a source of jobs, but rather as an important source of cash income to cover the costs of subsistence harvesting. It is estimated that at least 80% of the people who participate in the char fishery do so to offset the costs of maintaining their domestic harvesting lifestyle. Their intention is not to make a large amount of money or operate as a real business. In this sense the commercial char fishery has been very successful in providing an opportunity for a large number of people to make a small amount of money.

Keewatin Char Fisheries

The Keewatin char fishery involves individual fishermen fishing from small wood and canvas canoes using standard gill nets. Inconsistent production levels have always been a problem with the Keewatin fishery and have been attributed to a number of factors including poor weather, distant quotas and low returns to the fishermen which discouraged participation in the fishery. However, production over the past two years has been down and during the 1993 season ail of the major char producing rivers near southern Keewatin communities showed extremely low production raising concerns that the local char populations have become seriously depleted. The state of the char stocks has therefore become a important issue in this fishery.

The Keewatin char fisheries provide seasonal employment that may last up to two months each year. There are approximately 125- 150 licensed fishermen participating each year representing approximately 13 per cent of the region's male labour force. However, given the short time frame of the fishery, this translates to about 12 PYs. There are an additional 12 people working in the fish plant, which translates to about 6 PYs.

The harvesting sector of the Keewatin fishery has never been very well organized and participation in the fishery can be sporadic with different people participating each year depending on what other opportunities are available in the community. In 1991 it was estimated that total gross revenues earned by Keewatin char fishermen were approximately $122,000. After expenses this provided a total net income of $89,082 or an average seasonal income of $890 per fisherman (Eggers 1992). This low average return to fishermen is due to a combination of high harvesting costs and a large number of fishermen harvesting limited quotas. Analysis of harvesting patterns in Arviat indicated that most fishermen only made 2-4 commercial sales during the season before the nearby quotas closed, resulting in low per capita incomes. It is likely that this same pattern exists in other Keewatin communities.

In 1992, the NWT Development Corporation assumed responsibility for the Keewatin

char fisheries from ED&T. The DevCorp is currently constructing a new fish plant in Rankin Inlet and has taken over product development and marketing for char products. The DevCorp has concentrated on producing value added products for sale in the upscale southern market in the belief that the greater returns on these products will increase the economic viability of the char fishery and ultimately increase the interest of and benefits to local fishermen.

The Keewatin char fisheries will receive a major injection of investment over the next three years. Capital investment from all sources are estimated to be about $1.8 million over this time period. In addition, these char fisheries will receive relatively more subsidy dollars so long as need can be demonstrated. This could be as high as $815,000 from all sources over the next 3 years.

The net result of this investment is an estimated increase in PYs of harvesting employment from 12 to 14. In the plant, employment will remain at 12 'nearly' fill-time jobs, because the plant will continue to process both fish and caribou.

Kitikmeot Char Fisheries

Information available from ED&T records (Eggers 1992) indicate that during the 1990/91 season the Cambridge Bay export char fishery provided employment to 20 fishermen representing approximately 7.5 per cent of the male labour force in the community. Gross revenues to fishermen totaled $29,338 and net revenues totaled $20,310 resulting in an average net income of $1,016 per fisherman. The processing facility was estimated to provide direct income of $37,000 to about 12 other employees, for an average net income of $3,083 per plant worker. This level of income is very low. However it is generally acknowledged that the income earned from the fishery is very important to those - mainly the older people in the community - that participate, as it allows them to purchase equipment such as guns, motors, boats, and skidoos which are needed to pursue fishing and hunting, a lifestyle that older people enjoy and value. These people have very few alternative sources of disposable cash income.

At a conversion factor of $12,000 per PY, this $66,338 in estimated total income translates to about 5.5 PYs.

Assuming that the NWT Development Corporation and the Ikaluktutiak Co-op can come to some kind of agreement, the DevCorp is prepared to invest $1.2 million in new processing capability in Cambridge Bay - infrastructure that is badly needed if the fishery is to stay in business and diversify its product range. In addition, ED&T plans to support the community of Gjoa Haven in obtaining a boat - based on a custom designed prototype · which would be used both for fishing around Gjoa Haven and subsequent transport of the catch to Cambridge Bay for processing. Both ED&T and the DevCorp have budgeted subsidies totaling about $238,000 per year in support of these fisheries.

In the event that both of these proposals are realized, it is estimated that 10-15 harvesting jobs in Gjoa Haven, and 4-6 jobs processing jobs in Cambridge Bay could be added to present employment levels. This translates to an increase of about 1.7 PYs.

Summary

The following table summarizes the anticipated impact on employment in all fisheries from both short term capital investment and redistribution of subsidy payments:

Employment Impacts
Expressed in Equivalent PYs

Fishery	current	Future	Change	% Change
Great Slave Lake	72.5	52.8	- 19.7	- 27
Mackenzie Delta Whitefish	2.5	2.5	+ 0.0	0
Baffin Turbot*	35.0	120.5	+ 85.5	+ 244
Baffin Char	10.0	10.5	+ 0.5	+ 05
Keewatin Char	18.0	20.0	+ 2.0	+ 56
Kitikmeot Char	6.6	8.3	+ 1.7	+ 11
Total	**144.6**	**214.6**	**+ 70.0**	**+ 48**

Note: The estimated reduction in employment in the Great Slave Lake is a result of changes in the subsidy program only. The net loss will be minimized if the smaller operators qualify for support under the proposed Wildlife Harvesters Support Program.

- **Employment increases in the Baffin Turbot fishery have been estimated by the NWT DevCorp**

The bottom line? Directing most of the proposed capital investment into the developing fisheries in the Eastern Arctic, and revising the Fish Freight Subsidy Program to more equitably distribute subsidies among all fisheries, could result in a 48% increase in total employment in 3-4 years. Although jobs in the Great Slave Lake fishery will be somewhat reduced, most of these jobs represent small-scale B Class fishermen that will be absorbed by Renewable Resources harvester support programs. The average income of all fishermen should increase as well, because of the intent to foster more efficiency within all fisheries. However, lack of adequate data prevents us from undertaking a determination of the impacts on average income. In total, 214.6 jobs are projected to be created/maintained in the commercial fishery sector, at an estimated annual average cost of $9,236 per job (including the amortized cost of capital).

Evaluation, Monitoring and Coordination

Without ongoing monitoring and evaluation it is impossible to assess the success of a fishery or plan for future development. As already mentioned, NWT fisheries have suffered both from a lack of evaluation and a lack of basic data collection required for evaluation. Moreover, most fisheries data currently collected focuses on production levels and/or gross industry income with little emphasis on net benefits derived by fishermen or communities.

To remedy this problem ED&T should begin evaluating fisheries initiatives using the economic planning framework developed by DFO for fishery management in the N'WT. This planning framework, commonly referred to as the five account system, provides a systematic, standardized approach for economic analysis of fisheries.

The major advantage of the five account system is that it allows the analyst to use a number of different criteria for analysis simultaneously. Generally, there are two standard tests applied to fisheries: economic efficiency and economic impact. The five account system expands these criteria, particularly the economic impact criteria, to assess fisheries in terms of their contribution to:

- economic efficiency
- employment
- regional development
- cultural significance
- resource conservation

Under the five account system, an "account" is set up for each objective, specific indicators that can be specified or quantified are developed for each account, and tools for analysis are developed that allow the indicators to be measured or ranked.

Each of the accounts is briefly described below.

1. Economic Efficiency

The major indicator of economic efficiency is the "net economic value of production" which is determined using a standard benefit-cost analysis. There is a specific, standardized methodology for benefit-cost analysis laid out in the Federal Treasury Board "Benefit-Cost Analysis Guide" and analysis is generally quite rigorous and detailed but can be simplified. It should be noted however, that a benefit-cost analysis is not just a financial accounting of the costs and revenues generated by a commercial fishery initiative. Carrying out a proper benefit-cost analysis requires specific training and time-series data collected in a consistent manner and few fisheries have this type of data available.

The data for benefit-cost analysis is usually collected through "costs and earnings" surveys which also have a standardized methodology. Cost and earnings surveys typically capture the net return to the enterprise (usually the vessel) and the earnings of crew and captains/owners.

2. Employment

A major indicator in the employment account is the amount of direct and indirect employment generated by the fishery. The amount, and in particular the *type*, of employment is central to analysis. Employment generated is often not recorded although data is sometimes collected in costs and earnings studies. Employment is usually measured in fill-time person-year equivalents (PYs).

Ranking the relative importance of employment generated by the fishery is also a useful indicator. Employment is usually ranked as very important important, or not important based on the proportion of total annual income participants derive from the fishery. Data required to complete this analysis is annual income by source which is usually derived from a local income analysis.

In subsidized fisheries, cost-per-job generated is also an important indicator.

3. Regional Development

Indicators for the Regional (or Community) Development account include a measure of the value added to the local economy as a result of commercial fishing operations and the value added by direct suppliers to the fishery sector such as vendors of fuel, bait, nets, and food.

In addition to conventional economic impact analysis, other objectives of regional or community development can be included in this account. For example, the goal of decreased community dependence and increased local control could be assessed using qualitative ranking - high, medium or low.

Usually the consultative and/or political process details regional and community development needs and fishery advisory boards are set up to allow these needs to surface.

4. Cultural Significance

The cultural significance account provides a qualitative ranking of the importance of commercial fishing to the maintenance of traditions and lifestyle. The ranking system used is usually very important, important, or not important.

Because of the qualitative nature of the cultural significance account, analysis requires experience and expertise. Knowledge of the culture is necessary but the use of advisory boards or community groups may supply the information for assessment under this account.

5. Resource Conservation

Ranking of high, medium or low would provide a qualitative statement of the stock management status of the resources being harvested by the commercial fishery.

The resource conservation account relies primarily upon the expertise of DFO for

estimates of fish populations and upon conservation officers for specific information about the habitat. Community interest groups may also assist here.

To use the five account system for analysis of NWT fisheries, the following information would be required:

- costs and earning data (plant and fishermen)
- costs of production data (FFMC, DevCorp and subsidies)
- employment data (employment survey)
- community survey data on family income and expenditures
- regional development data

The five-account system provides a useful means of evaluating fisheries initiatives in the NWT'. The framework can be tailored to meet the specific needs and objectives of each NWT fisheries initiative and adapted so that data collection and analysis is relatively straight forward. In addition, it provides a method of evaluation that allows comparison among various fisheries initiatives. By ranking each of the NWT commercial fisheries initiatives in terms of total benefits, the five-account system would enable the GNWT to evaluate which initiatives provide the greatest benefits per level of investment. As government funding becomes increasingly scarce, this ability to clearly specify and rank the benefits of development will become more and more important.

However, the data required to use the five account system effectively is, not readily available. In particular, cost and earnings information is not available for most fisheries. Therefore, more time and resources should be committed to developing a comprehensive evaluation framework and collecting the necessary data to implement it. It is recommended that personnel from ED&T's Policy and Planning Section be tasked with this evaluation and that a budget of $50,000 be allocated for evaluation over the next three year period. This budget would provide for cost and earnings studies and evaluation on all of the major fisheries initiatives.

Monitoring and Coordination

Either of two mechanisms, or a combination thereof, could be used to improve fishery coordination and management in the N'WT. The first option would be to work through the Cooperative Management Boards, however, with the exception of the Inuvialuit Fisheries Joint Management Committee (FJMC), all Cooperative Management Boards are involved with both wildlife and fisheries and might not have the necessary focus and concentration of purpose that fishery development requires. Moreover, Cooperative Management Boards do not include major stakeholders such as ED&T and the DevCorp.

The second option would be to work through the EDA structure. This option is preferable, primarily because the EDA structure already involves a regional structure (EDA Regional Fisheries Sub-Committees) and a territorial-wide structure (EDA Fisheries Management Committee); a wider range of stakeholders; extensive consultation at the regional level with affected parties; a degree of annual planning through annual work plans; monitoring and reporting, and mid-term and final evaluation of the agreement. However, to be more effective in fisheries coordination, at least two changes would be required to the EDA structure: membership on the EDA committees would have to be expanded to include more players when required (e.g. DevCorp, Cooperatives and Fishermen Associations); and EDA fisheries strategies would have to be coordinated and integrated with ED&T and Cooperative Management Board plans and strategies.

If combined with effective data gathering and fishery evaluation, the EDA structure could be used as an effective forum for industry planning and monitoring at the regional and territorial-wide levels; and as a mechanism for providing stakeholders with more reliable and valid information to make informed decisions. The expanded EDA structure could also be used to resolve a number of current stakeholder conflicts over industry goals and objectives, roles of agencies and funding. Examples of conflicts are many including:

Marketing Conflicts: One example of conflict arising from differing department and agency objectives can be seen in the area of marketing. FFMC's major goal is to provide the best fish price to fishermen. To facilitate this goal, FFMC has sought higher plant

efficiency by closing small northern processing plants and moving all processing into the south, losing many job opportunities for northern residents in the process. FFMC's goal of economic efficiency conflicts with the goal of the DevCorp and ED&T to create jobs.

Another marketing conflict exists between DevCorp and the Ikaluktutiak Coop in Cambridge Bay. In 1992 the NWT negotiated an exemption for arctic char from the FFMC marketing monopoly and as a result the Co-op lost its traditional market for char. The Co-op was unable to sell char on its own at a price that would make a profit - something the Co-op had always historically accomplished - nor was the DevCorp prepared to pay the price the Co-op needed to earn a profit, or provide the Co-op with marketing support. The DevCorp was prepared to assume ownership of the local fish plant and replace the Co-op's role in the development of the fishery, however the Co-op was opposed to being taken over.

The problem between the Ikaluktutiak Coop and the DevCorp also reveals another conflict: an outside government agency (DevCorp) that wants to control fishery development on its own terms; and a local organization (Co-op) that wants to maximize local control, management and profits with the view that all benefits should stay within the community.

Government Standards versus Business Viability Conflicts: The Arviat Fish Plant provides an example of the conflict between government standards and business viability. Until 1990, the Arviat fish dealer successfully operated from a small shack in the community, purchasing fresh arctic char for resale to FFMC and earning a small profit. Because the operation did not meet DFO standards for export, however, the owner was encouraged to establish a more modem fish plant and, with the full support of ED&T and the DevCorp, purchased a new fish plant. Since then, because of high plant operating costs (as well as poor management and declining catches) the owner has suffered consistent and increasing annual losses in the operation. It is arguable that if the new fish plant had not been purchased to meet DFO standards, the owner would have continued to earn a small profit.

Job Creation versus Resource Sustainability Conflicts: Both the DevCorp and ED&T have job creation in small and remote communities as a principal objective of development, whereas DFO has resource sustainability as a principal objective. Although these objectives do not necessarily conflict, especially when resource sustainability appears assured, there is conflict when the level of harvesting is not sustainable or when there is doubt concerning the level of harvesting a fish resource can withstand. Two examples can be drawn. The ***first*** involves the Keewatin Fisheries where the DevCorp recently established a meat/fish plant and where there appears to be considerable concern about the ability of the char resource in the South Keewatin to withstand any additional fishery development. Indeed, to protect the resource for domestic use, DFO may discontinue commercial fishing in the South Keewatin for an unlimited period of time until the resource base is assured.

The second example involves the Pangnirtung Fishery where development\ if unchecked, could exceed resource sustainability. To date, resource sustainability has not been a problem, however sustainability may increasingly become an issue as increasing numbers of residents from outlying immunities choose to enter the fishery as a means of earning income. Since there is strong political pressure on the DevCorp and ED&T to create jobs, both agencies would likely encourage participation as a means of job creation and resource sustainability might be compromised.

Development Priority Conflicts: The issue of where fishery development should occur is also an area of potential conflict between stakeholders. Recently ED&T (Kitikmeot Region) attempted to obtain teat fishery quotas, large enough to support a commercial char fishery, for rivers near Gjoa Haven and Taloyoak but, were told by DFO, that these areas had low resource potential and other water bodies should be considered. DFO based their decision on resource assessment work done in the late 1970s and early 1980s, however, ED&T officials felt this work was no longer valid.

In light of the difference in opinion, DFO reluctantly agreed to provide small test quotas provided EDA finding was obtained to conduct test fisheries. However, under the EDA, only $190,000 of the total five-year EDA Fishery Program budget of $5 million has been

allocated to the Kitikmeot, while the Baffin and Keewatin receive much larger budgets. Since the Kitikmeot has received little EDA finding, yet opportunities in other regions (Keewatin) may not be as great, there may be pressure to re-profile EDA finds. This could become an issue of further conflict, pitting one region against another for scarce EDA dollars.

Given the above, the EDA structure could be an effective forum for industry conflict resolution however, there is no guarantee of a replacement EDA after 1996. Still, the EDA structure could be retained as an effective coordination and management mechanism if Regional Fisheries Committees, funded and supported by the government, were established to replace the **EDA** Regional Fisheries Committees.

Assuming that the **EDA structure** continues, membership on the regional and territorial **EDA** Fisheries Committee would be expanded to include representatives from industry (e.g. DevCorp and fishermen's associations) and Cooperative Management Boards.

Regional **EDA** Fishery Committees would have the following responsibilities:

- preparing annual regional fishery plans in consultation with Cooperative Management Boards, DFO, Renewable Resources, DevCorp and other stakeholders.
- reviewing proposals submitted by stakeholders and making recommendations to the department and other funding agencies on fishery development.
- promoting fishery projects that are deemed feasible, encourage NWT food self-sufficiency and stimulate economic development in the NWT.
- monitoring commercial fishery projects and evaluating projects and regional programs annually against set goals and objectives. DFO/ED&T joint data gathering and evaluation measures (Five Account System) would be coordinated with the EDA evaluation.

At the territorial level, the **EDA** Fishery Management Committee would have responsibility for overall industry coordination, monitoring and evaluation. The territorial-

wide committee would report through a chair-person to the Deputy Minister of ED&T, Deputy Minister of Renewable Resources, and Director General of DFO (Central and Arctic region).

The benefits from using the EDA structure would include:

- building on an existing structure familiar to stakeholders
- increased stakeholder participation and decision making
- maintaining the department's thrust for regional control
- improved coordination monitoring and evaluation

Implementation Plan

To successfully implement the new strategy the Department would have to implement a variety of distinct tasks over the next six to twelve months. Implementation tasks should include:

- Submitting draft strategy to SCOF and Cabinet
- Effective communication with stakeholders
- Revise strategy based on results of communication
- Assessing northern supply and demand parameters for NWT fish products
- Letter of instruction from the Minister of ED&T to the NWT DevCorp regarding provision of marketing services for all NWT fish species and fisheries, and maximizing development of domestic markets
- Developing new Commercial Fishing Support Policy
- Lobbying DFO for ITQ System, protection of domestic turbot supplies, and additional biological assessment work
- Lobbying Renewable Resources to cover small-scale B Class fishermen under current Harvester Support. programs
- Lobbying CEIC and Arctic College to provide training
- Coordinating introduction of Harvest Support Programs with Renewable Resources and NTI
- Developing and implementing an effective public relations program, including ITQ formation
- Using expanded EDA Fisheries Committees for more effective coordination
- Undertaking joint data collection and evaluation system with DFO

An implementation schedule and major milestones are presented on the following page.

IMPLEMENTATION PLAN

Completion Milestones	Feb-94	Mar-94
Submit Draft Strategy to SCOF and Cabinet		
Effective Communication with Stakeholders		
Assess Northern Supply and Demand		
Revise Strategy Based on Effective Communication		
Letter of Instruction to DevCorp		
Develop New Commercial Fishing Policy		
Lobby DFO for ITQ System and Biol Assess.		
Lobby Renewable Resources for Fishermen's Support		
Lobby CEIC and Arctic College to provide training		
Coordinate with Renewable Resources Harvest Support Program		
Develop and Implement Public Relations Program		
Use Expanded EDA Fisheries Committee tor Coordination		
Undertake Joint Data Collection and Evaluation System		

Communication Plan

To obtain broad stakeholder support for the commercial fishing strategy a commuication plan is proposed, designed to reach government players and private sector participants in the fishery. The proposed communication plan would have three purposes: to educate and inform, to solicit input, and to develop consensus on fisheries development in the Northwest Territories.

Who Will Be Consulted

The following agencies and groups, at a minimum, should be consulted:

Department of Fisheries and Oceans: DFO support is required if an ITQ system is to be introduced in the Great Slave Lake and Pangnirtung Turbot fisheries. DFO support is also needed for the EDA structure as a means of improving coordination, for developing a shared system of data collection and evaluation, and for undertaking additional biological assessment work in critical fishery areas (e.g. Pangnirtung, South Keewatin, Gjoa Haven and Taloyoak)

Renewable Resources and NTI: The Department of Renewable Resources and NTI would be directly affected if introduction of the new Commercial Fishing Support Policy resulted in an increased demand for a harvest support from small scale producers (e.g. Great Slave Lake Class B fishermen). Therefore, it is critical that Renewable Resources and NTI support the new fisheries strategy and the Commercial Fishing Support Policy. Introduction of Harvest Support Programs should also be timed with the introduction of the new Commercial Fishing Support Policy.

Cooperative Management Boards: Cooperative Management Boards have authority for resource allocation and, in future, will become much more important players in fishery development and management, therefore they must be consulted to develop broad

acceptance of the strategy and agreement with the general direction being taken by ED&T · this is especially important for the Nunavut Wildlife Board since most major fisheries come under the board's jurisdiction. Cooperative Management Boards should also support use of the EDA structure for improved industry coordination.

DevCorp: There is currently poor communication between the DevCorp and a number of industry stakeholders (e.g. Arviat fish plant owner/operator, Cambridge Bay Ikaluktutiak Cooperative). Coordination between the corporation and other stakeholders is also poor - in part because the DevCorp is not represented on any EDA Fisheries Management Committees or Cooperative Management Boards. DevCorp objectives and role are also often in conflict with those of other stakeholders therefore, as part of strategy implementation the DevCorp needs to be consulted and agreement obtained on ways and means of overcoming identified problems.

Fishermen's Groups: the various fishermen's associations and private groups involved in fisheries initiatives across the north need to be consulted so there is an understanding of the issues that need to be addressed, and acceptance of strategy principles and strategy direction. More importantly, fishermen's associations need to be aware of the implications of the strategy for their operations, including both the benefits and the trade-offs - in some cases the number of fishermen employed and the freight subsidy available will be reduced. It will be most important that consultation with the various fishermen's associations be undertaken through open, informed discussions - ideally in the form of workshops with overheads and summary information presented.

Communication Tools and Programs

The following tools and programs are proposed:

- a video program, in English and Inuktitut which describes the history and current status of the NWT fishing industry, identifies the problems facing NWT fisheries and offers possible solutions as described in this strategy
- a summary of the strategy in English and Inuktitut for distribution to fishermen
- Regionalized version of the strategy, and Regional Workplan for distribution to fishermen
- meetings with other government agencies to formally present the proposed strategy
- meetings with major private stakeholders to formally present the proposed strategy and solicit response
- distribution of the strategy document in full to the EDA fisheries sub-committees with regional EDT staff as contact points for the committee members
- a video program explaining the nature and use of ITQ systems and workshops on ITQs for communities and wildlife management boards. Workshops would involve resource people experienced in the implementation of ITQs.

Communication Schedule

It is proposed that the communication schedule begin in March and continue through April and May with visits and meetings in each region. Video production should begin as soon as possible

Appendix 1

Fishery Investment/Benefit Calculations

Notes to Fishery Investment/Benefit Tables

Table Entries are based on the following data and calculations

Great Slave Lake

Production

	87/88	88/89	89/90	90/91	91/92	5 year Avg
Volume (kgs)	1,583,000	1,529,000	1,800,000	1,680,000	1,694,000	1,657,200
Average Price/kg	$1.33	$1.31	$1.07	$0.93	$0.95	$1.11
Landed Value	$2,100,000	$1,998,000	$1,919,000	$1,567,000	S1,617,000	S1,840,200

As Reported by DFO. Note, landed value rather than market value has been used to denote value of this fishery because virtually all fish is sold to FFMC, therefore the price to the fisherman represents the total return to the NWT from the sale of Great Slave Lake fish.

These figures represent total catch from Great Slave Lake, not only whitefish.

Costs of Fishing: Average cost of fishing was calculated using data provided in the 1990/91 Great Slave Lake Costs and Earnings Study. This value includes equipment depreciation but no wage or return on investment for owners or operators. We have also deducted crew wages from total costs so that all wages will be represented in the total benefits value.

Government Assistance:

	1990/91	1991/92	1 992/03	1 993/94	4 year Avg
Fish Freight Subsidy	$638,802	$820,000	$550,158	$529,000	$584,490
EDA	8235,150	$0	$0	$30,770	388,482
BDF		$81.242	$28,683	$35,450	$41,792
Total	$873,961	$881,242	$578,841	'$595,220	$892,784

As provided by ED&T.

Total Benefits are the sum of revenues and wages earned by the fishery and government assistance. These benefits are distributed to the owners and crew in the form of wages.

Mackenzie Delta Fishery
• Ail values have been supplied by ED&T Inuvik Region

Production	1989	19901	1991	1992	Average
Market Value	$16,321	$26,930	$42,433	$39,120	$31,201

Coats of Harvesting

	1989	1990	1991	1992	Average
Total Project Co:sts	I $ 1 0 78 6	592,657	$161,144	$130,345	$122,941
Minus Fish Purchases	($21,600)	($18,034)	($28,054)	($29,140)	($24,207)
Minus Plant Wages	($5,250)	($9,926)	($11,653)	($15,749)	($10,645)
Minus Vessel Wages	($5,500)	($10,705)	($15,049)	($7,120)	($9,594)
Coordinator/Admin Wages	($25,401)	($21,976)	($30,401)	($19,700)	($24,370)
Plus Fishermen's Costs	$2,166	$3,249	$3,249	$4,332	$3,249
Total Costs Excluding Wages	$52,033	$35,265	$79,236	$62,968	$57,376

*Note: These costs do not include costs of biological work or training costs. Nor do they include costs that were covered through government contributions in kind (e.g. loan of Renewable Resources boat - cost estimated at $10,000/yr)

Wages as supplied in test fishery final reports 1989-1992

Fishermen's costs have been calculated on a per capita basis as per estimates made in Eggers 1992.

Government Assistance

	1989	1990	1991	1992	Average
Capital	$58,097	$52,881	$82,174	$18,806	$47,490
Operational (not including training)	$45,200	$17,646	$66,537	$72,419	$50,501
Total	$101,297	$70,727	$128,711	$91,225	$97,990

• as reported by ED&T Inuvik. Assistance does not include assistance in kind (i.e. Loan of Renewable Resouces boat (value $10,000 per year) is not included

Char Fisheries

Kitikmeot Char Production

	1988	1989	1990	1991	1992	5 year Avg
Volume (kgs)[1]	64,298	46,150	38,012	45,948	21,000	43,081.6
Average Price /kg[2]	$10,23	$11	$8.8	$9.9	$9.5	$9.89
Total Market Value	$857,769	$507,650	$334,508	$454,885	$199,500	$430,862

1. Volumes supplied by ED&T
2. Average FFMC Wholesale Price

Kitikmeot Char Total Costs

Fish Purchases[1]	$88,348
Plant Costs[2]	$71,140
Freight Costs[3]	$83,233
Total	$200,719

1. Based on Coop payments to fishermen of S0.70 per pound.
2. Based on plant costs for 1987, inflated to 1993 values using an index of 1.247.
3. Based on the average level of freight subsidy paid during 1988 and 1989.

Kitikmeot Gvt Assistance

	1 990/91	1991/92	1992/93	1993/94	4 Year Avg
Fish Freight Subsidy	$25,798	$37,435	$0	$0	$15,808
EDA	$0	$19,000	$124,702	$57,000	$50,176
Total	$25,798	$56,435	$124,702	$57,000	$65,984

Data supplied by ED&T.

Keewatin Char Production

	1988	1989	1990	1991	1992	5 year Avg
Volume (kgs)[1]	48,390	36,500	16,145	32,631	31,000	32,933.2
Average Price/kg [2]	$10.23	$11.00	$8.80	$9.90	$9.50	$9.89
Total Market Value	$495,030	$401,500	$142,076	$323,047	$294,500	$325,578

1. Volumes supplied by ED&T.
2. Average FFMC wholesale price.

Keewatin Char Total Costs [1]	
Fishermen's Costs[2]	$112,100
Plant Costs[3]	$77,548
Total	$189,648

1. Values include costs for the Rankin Inlet, Whale Cove, Chesterfield Inlet and Arviat.
2. Based on total fishermen's capital costs of $62,056 and operating costs of S0.95 per kg derived from 1988 costs and earnings studies and inflated to 1993 using an index of 1.199. Costs include depreciation but not wages or return on investment.
3. Based on 1988 actual plant costs: capital costs of $59,500 and operating costs of $.16 per kg not including the costs of purchasing fish, inflated to 1993 using an index of 1.199.

Keewatin Gvt Assistance

	199W91	1991/92	1 992/93	1 993/94	4 Year Avg
Fish Freight Subsidy	$11,057	$9,960	$1,963	$0	35,745
BDF	$0	$90,558	$150,145	$35,654	S69,089
EDA [1]	$0	$104,000	$103,238	$275,675	$120,728
DevCorp	$0	$40,000	$615,000	$0	$163,750
Total	$11 ,0s7	$204,518	$255,346	$311,329	$195,562

Data supplied by ED&T

1. Includes only EDA funding directly related to commercial char development.

Baffin Char Production

	1988	1989	19%0	1991	1992	5 year Avg
Volume (kgs)[1]	46,000	46,000	51,000	41,147	42,700	45,369.4
Average Price/kg[2]	$10.23	$11.00	$8.80	$9.90	$9,50	$9.89
Total Market Value [3]	$470,580	$506,000	$448,800	$407,355	$405,650	S448,522

1. Volumes reported by ED&T
2. Average FFMC wholesale price
3. Assuming that all Baffin char is exported and soid at average market price. At present much of this char remains within the region.

Baffin Char Total Costs

Fishermen's Costs[1]	S41 ,285.79
Plant Costs[2]	$117,522
Freight Costs[3]	$21,598
Total	$180,405.79

1. Based on $0.91 per kg (Eggers 1992). NOTE: This does not include wages to the fishermen
2. iO% of total piant costs reported for Pangnirtung fish plant (average 1989/90 and 1992/93)
3. Based on average amount- of fish freight subsidy paid 1990/91 - 1992/93.

Baffin Char **Gvt Assistance**

	1 990/91	1991/92	1992t03	1 993/94	4 Year Avg
Fish Freight Subsidy	$10,604	$10,049	$11,484	$11,000	$10,799,
EDA [1]		337,700[	$82,300	$48,051	$56,017
DevCorp [2]		$49,928	$53,528	$43,528	$48,995
Total	$10,664	$97,677	$147,312	$102,579	$115,811

Values provided by ED&T

1. Oniy that portion of EDA directly related to commercial char development
2. 10% of DevCorp costs in the Pangnirtung piant have been apportioned to the Baffin char fishery on the basis of percentage of fish volume handied. DevCorp capital expenditures have been amortized over a twenty year period.

Baffin Turbot fishery

Production, market value and cost figures for ?992 have been used as supplied by the NWT DevCorp. Market Value reflects the dollar value actually received by the Pangnirtung fish plant.

As shown below, Total costs include Total Plant Costs (provided by NWT DevCorp) not including wages or cost of purchasing fish, and Fishermen's Costs (provided by Ashley 1993) not including wages. Therefore total costs include costs of harvesting and processing exclusive of wages.

Operating Costs	$1,071,193
Minus processing wages	$ 139,183
Minus payments to fishermen	$ 540,684
Plus fixed processing Costa	$ 212,173
Plus fishermen's costs	$ 383,885
Total Costa	$ 987,384

Baffin Turbot Fishery Government Assistance

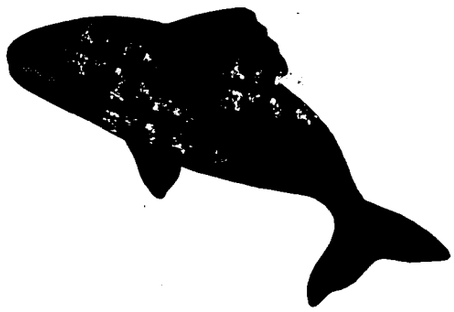
DevCorp (90%)	$381,827
Fish Freight	$70,787
EDA	$56,426
BDF	$9,217
Total	$498,257

DevCorp capital assistance has been amortized over 20 years on a straight line basis. 90% of DevCorp assistance to the Pangnirtung fishery has been attributed to the turbot fishery based on volume throughput of turbot and char.

In calculating the projected returns from the Pangnirtung fishery should the complete quota of 1,000 tonnes be harvested, we assumed that fixed plant costs would remain the same and operating costs and wages would increase on a proportional basis. We also assumed that average annual government investment would remain the same as a large portion of government assistance is made up of amortized capital investment.

REPORT ON EMPLOYMENT AND INCOME FROM NWT'S COMMERCIAL FISHERIES

Winter 1990/91 - Summer 1991



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June 8, 1992

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Larry Simpson, Supervisor Renewable Resource Devebpment, ED&T, Iqaluit, NWT
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REPORT ON EMPLOYMENT AND INCOME FROM NWT'S COMMERCIAL FISHERIES

Commercial fishing in the Northwest Territories plays an important part in the northern economy. It is the most developed of the renewable resource industries, and generated about $1.8 million in income in 1990/91 to about 700 fishermen and 100 employees in the fish processing/handling sector. See Figures 1 and 2. NWT fishermen harvested some 1.7 million kilograms of fish during the 1990/91 winter and 1991 summer seasons, which was valued at $2.2 million.

This report was prepared to show the impact of the Fish Freight Subsidy (Renewable Resource Enhancement Policy, Schedule A) on employment and income in the fish harvesting and processing/handling sectors of the NWT economy. The scope of the study includes export (outside the NWT) and intersettlement trade of inland and inshore marine species, where information is available. The growing offshore fishery, including shrimp and the developmental groundfish fisheries, is not currently subsidized, and is not addressed in this report.[1]

Commercial Fishery Assistance Program

High operating costs combined with falling fish prices render most NWT fisheries marginal at best, if assessed in purely financial terms. From a socioeconomic perspective the commercial fisheries play a key role in the northern economy, particularly in the more remote, isolated communities. Most commercial fisheries in the NWT depend upon the support of the fish freight subsidy for their very existence.

The program is comprised of four elements:

1) freight assistance and price support to Great Slave Lake fishermen to ensure they receive the same return per pound, after cost, as that received by Lake Winnipeg commercial fishermen;
2) price support for other inland fisheries to ensure fishermen the same price per pound for fish as that received by Great Slave Lake fishermen;
3) freight assistance to export char fisheries; and
4) assistance for intersettlement trade to offset up to 50% of freight cost between communities.

In the 1990/91 fiscal year, the Department of Economic Development and Tourism contributed $757,435 to NWT fisheries through fish freight assistance. By far the largest portion of program dollars (about $668,800 in 1990/91) is used to offset freight costs on Great Slave Lake.

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1 One and a half offshore shrimp licenses are held by an NWT company. Though landed outside the NWT, the shrimp fishery generated over $1 million in income to about 44 Baffin fishermen last year. Recent acquisitions of developmental groundfish licenses by NWT companies signifies prospects for additional pbs and income.

NWT Commercial Fisheries

All but the Great Slave Lake whitefish and trout fishery, active since 1945 and the only truly established fishery, are in various stages of development. The Cambridge Bay and Keewatin export char fisheries and the Baffin export turbot fishery have been ongoing for a minimum of five years, have established fish plants for processing, and are considered to be in an advanced developmental stage. A test fishery for broad whitefish in the Mackenzie Delta completed its third year in 1991. In addition, many coastal communities engage in intersettlement trade of char. Production is not monitored to the same degree as export fisheries; hence precise information about production and the number of people involved is often lacking.

Employment in the commercial fishing and fish processing/handling sectors is seasonal and somewhat sporadic, with wide variations in the number of participants and effort per participant at any given time. Typically, a small number of fishermen are responsible for harvesting the bulk of production, with the majority producing much smaller volumes. Fishermen have variable costs depending on the type of equipment they use and the type of fishery. There are gaps in the current information base. These factors make it difficult to depict an accurate picture of employment generated by the fishing and processing/handling sectors that is comparable with other sectors.

For comparison purposes person year equivalences were calculated based on certain assumptions. The methodology, its rationale and limitations are described below.

Methodology

Data was gathered from each region on fisheries production, participation, income **to fishermen and operating expenses, and employment and income in fish processing/handling for the period winter 1990/91 and summer 1991. The 1991/92 winter fisheries were in progress at the time of writing.** The results will not be **available until next summer.**

In some regions, a centralized processing facility exists, through which all export fish is routed on its way to southern markets. The Freshwater Fish Marketing Corporation (FFMC) purchases most of the fish from Great Slave Lake, Mackenzie Delta, and the Kitikmeot and Keewatin regions. In these cases, data was obtained either from the plant or the FFMC. In other regions, most notably the Baffin, the majority of the commercial ohar harvest is sold within the **Northwest Territories. Without passing through a** centralized location, fish harvest data **was more difficult to capture. Harvest data was collected through a telephone survey with appropriate members of fishing communities. While the data is deemed to be reasonably accurate, the numbers are not absolute.**

Person year equivalencies were calculated for fishing effort and processing/handling. The Business Development Fund Policy defines one person year as "a job where the employee receives at least twelve thousand dollars ($12,000) per year or forty (40) weeks of employment" (Schedule B, p. 14).

Fishing

Any individual who fishes and sells some portion of fish caught, regardless of quantity, was considered a fisherman for the purposes of this report. Net income of fishermen was selected as the basis for deriving person years. A valueof$12,000 net income was said to represent one person year of employment. (The number of fishermen as an indicator was ruled out because of the wide range of effort per fisherman. Volume produced was deemed not to be a suitable indicator because fishing effort per measure of production vanes from one fishery to another. This would result in inconsistencies between regions.) For the purposes of this report net income was defined as revenue generated from fish sales

minus operating expenses. By removing the effect of variable costs of operation, income provided a reliable indicator to measure comparative economic benefits stemming from each fishery.

Unlike net income on a cash flow statement, depreciation was not subtracted from gross revenues to arrive at net income. The reason for this departure from normal accounting methods was that capital investment in fishing operations vanes widely even within a fishery. Moreover, accurate information about capital investment is simply not available at this time. It was felt that any attempt to estimate depreciation costs would be too unreliable, thus diminishing the overall validity of the data.

Fish Processing/Handling

This sector includes all processing and handling which occurs in the NWT which ranges from gutting fish and packing on ice to preparation of fillets or smoked fish. The number of employees was frequently given as a range as employment levels fluctuate throughout the season. Estimates of hours worked per week, number of weeks and rate of pay were used to arrive at income figures. One person year was deemed to be equivalent to 40 hours per week, 40 weeks per year, in keeping with the definition in the Business Development Fund Policy.

A final word of caution in interpreting the data relates to the determination of person years. Though person year equivalences are a useful tool for drawing comparisons between regions, this type of analysis tends to undermine the important linkages between the informal economy and commercial fishing. For example:

- fishing takes place primarily in Level II and Ill communities where alternative prospects for employment are few;
- commercial fishing results in reduced reliance on social assistance;
- it is estimated that net benefits would be doubled if the value of the subsistence harvest were included (the import substitution value of the subsistence harvest was not calculated because of the difficulty in capturing such data); and
- the commercial fishery sustains the subsistence fishery by providing monetary income which is used to maintain equipment and fishing gear.

Commercial fishing represents more than an occupation, but cultivates a lifestyle and sense of pride, difficult to quantify, but important to the overall well-being of the community.

Results

The Fish Freight Subsidy impacts each of the commercial fisheries in the NW, with the exception of the Mackenzie Delta fishery. Tables 1 to 4 show income and employment from commercial fishing and processing/handling for 1990/91 and projections for 1992/93 broken down by fishery. Table 5 shows total employment and income generated from all NWT inland and inshore fisheries; Table 6 shows the employment and income generated from only those fisheries that benefit from the Fish Freight Subsidy (i.e. all fisheries but the Mackenzie Delta Fishery).

The_ subsidy impacts directly on employment and income in the primary production sector, and indirectly on the processing/handling sector. However, it is well recognized by participants in the industry and Economic Development and Tourism personnel that

viability of both segments of the fisheries hinge firmly on assistance provided through the freight subsidy. In other words, without the subsidy, the commercial fisheries which are presently marginal at best, could not be sustained at current fish prices.

Indirect benefits of the subsidy accrue to the transportation industry as well, but these are difficult to quantify and were thus excluded.

- The subsidy impacts on nearly 700 fishermen and about 100 employees in fish processing/handling.
- Net income to fishermen was about $1.13 million in fisheries benefiting from the subsidy and $1.15 million in all fisheries.
- Income for fish processing/handling was about $627,000 in fisheries benefiting from the subsidy and $672,000 in all fisheries.
- Person year equivalences for fisheries benefiting from the subsidy are 94 PY's for fishing and 35 PY's for processing/handling, totalling about 130 person years.

It is also noteworthy that in addition to the subsidy considerable financial support is provided through Economic Development and Tourism and Economic Development Agreement contribution funding (about $730,000 in the 1990/91 fiscal year). In particular the Mackenzie Delta test fishery relies heavily on such assistance.

The figures indicate greater wages on average accruing to participants in the processing/handling sector in comparison to primary production. This imbalance may be explained by the vast divergence in fishing effort among fishermen compared to the wage based processing/handling sector. The independence gained and supplemental benefits of providing food provide the necessary incentive for individuals to fish as opposed to seeking wage employment in recessing/handling. Moreover, the most dedicated fishermen would net substantially greater than average incomes.

It was endeavored to predict changes in income and employment for next year. The basis for the figures provided is projections by the Renewable Resource Development Officers in each region who have considerable experience and expertise in this area. Projections are necessarily speculative, as the single most important factor in determining changes in fisheries production is the price of fish, over which we have no control.

Projections for the 1991 /92 winter season and 1992 summer season are:

- A $197,834 increase in net income to fishermen is projected, based largely on an estimated doubling of turbot production associated with the establishment of an additional fish buyer in Pangnirtung. This figure could be even greater if char prices recover from the slump of 1991.
- An increase of $45,000 in wages to fish processing/handling employees is projected for 1992.

FIGURE 1

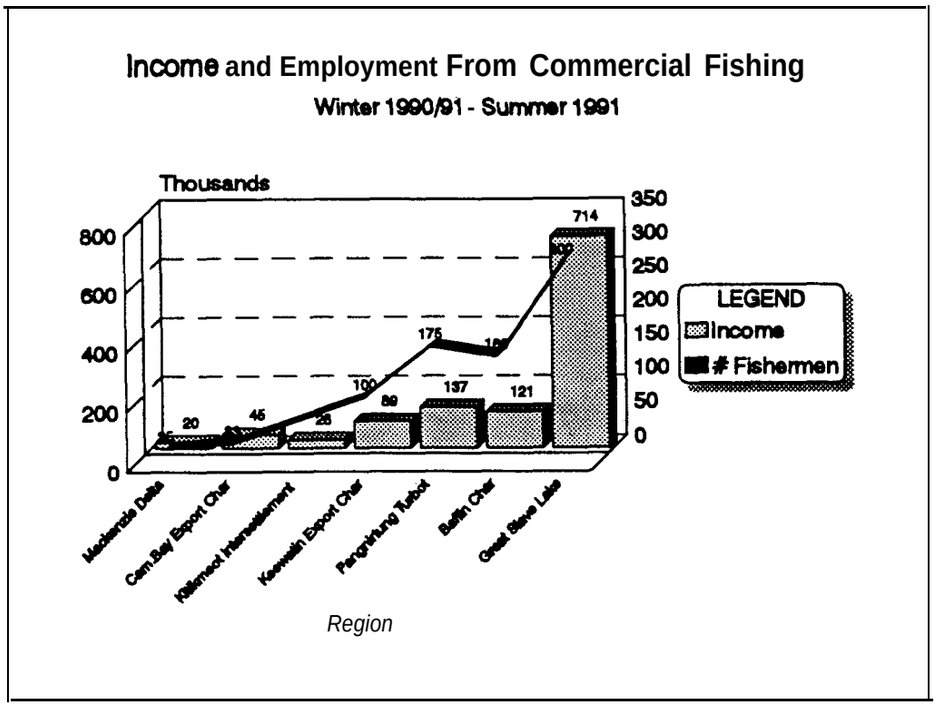

FIGURE 2

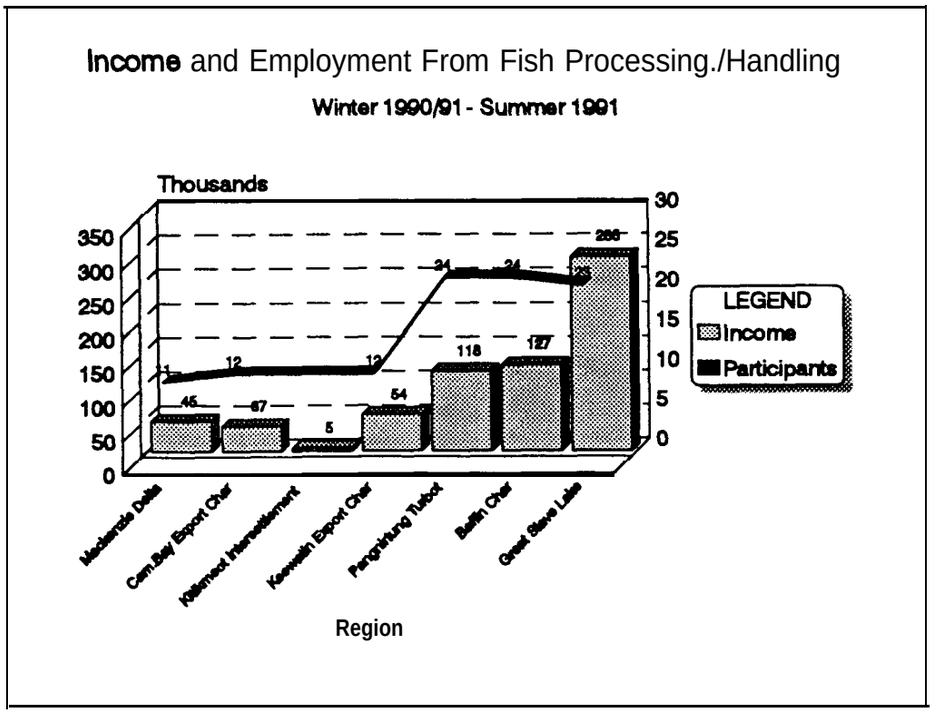

TABLE 1 Income and Employment From Commercial Fishing in the Northwest Territories Winter 1990/91 - Summer 1991

Fishery	# Fishermen	Volume (kg)	Gross Revenues ($)	Expenses ($/kg)	Total Expenses ($)	Net Income ($)	Income/ # Fisherman ($)[1]	PY's
Mackenzie Delta Fishery	25	24,332	29,338	0.37	9,027	20,310	813	1.7
Cambridge Bay Export Char	33	31,683	45,401	0.02	600	44,801	1,357	3.7
Kitikmeot Interset. Trade	n/a	9,080	232,117	0.83	4,320	27,797	n/a	2.3
Keewatin Export Char	est. 100	38,573	121,869	0.85	32,787	89,082	est.890	7.4
Keewatin Interset. Trade				unknown				
Pangnirtung Turbot Fishery	[3]175	121,675	187,770	0.42	51,104	136,666	.1,367	11.4
Baffin Char Fishery	[4]est.160	51,361	167,585	0.91	46,739	120,846	est.755	10.0
Great Slave Lake Fishery	[5]300	1,488,121	1,635,753	n/a	n/a	714,298	2,381	59.5
Total	**693+**	**1,764,825**	**2,219,833**	**n/a**	**n/a**	**1,153,800**	n/a	**96.0**

1 Averages do not necessarily reflect a typical fisherman as there is a wide range in productivity. For example, in the turbot fishery, the best fishermen can make over $20,000.

2 Does not include final payment.

3 Based on 86 licensed fishermen and an additional 89 helpers. There is overlap between this figure and the one below as some fishermen fish for char and turbot.

4 About 100 fishermen are from Pangnirtung and also fish for turbot. The remaining 60 fishermen fish for char throughout the Baffin.

5 This figure represents about 109 licensed fishermen and additional seasonal workers.

General Notes:

Information presented in this table is for winter fisheries 1990/91 and summer fisheries 1991. Data for winter fisheries in 1991/92 is not yet available. Refer to Appendix I for an explaination of how net income was determined. Income would be approximately doubled if import replacement value of subsistence harvest was to be included.

Natural Resources section

June 8,1992

TABLE 2 Projected Income and Employment for Fishing Winter 1991/92 and Summer 1992

Fishery	Projected Net Income ($)	Projected Incr (Deer) ($)	Incr(Decr) in # of Fishermen	Incr(Decr) in Projected PY'S	Notes
Mackenzie Delta Fishery	20,031	0	0	0	No change predicted.
Cambridge Bay Export Char	64,300	19,500	0	5.3	1991 represented a particularity low year for production. Historically, production at Cambridge Bay is about 100,000 lb (45,000 kg)
Kitikmeot Interset. Trade	27,797	0	0	0	No change predicted.
Keewatin Export Char	89,082	0	0	0	No change predicted.
Keewatin Interset. Trade	unknown	o	0	0	No change predicted.
Pangnirtung Turbot Fishery	300,000	163,334	0	13.6	Figures are basal on projected production of 250,000 kg turbot and a price to fishermen of $.70/lb ($1 .54/kg) and expanses of $.42/kg. Production is split amongst two companies, only one of which engages in secondary processing.
Baffin Char Fishery	120,846	0	0	0	A $ 50/lb increase in char prices to fishermen could result in a 10-20% increase in char production.
Nettilling Lake	15,000	15,000	4	1.25	Based on 40,000 lb (18,000 kg) at $4.25/lb minimum viable price.
Great Slave Lake Fishery	714,298	'o	o	0	No change predicted.
Total	**1,351,354**	**197,834**	**4**	**20.15**	

The above noted projections are speculative only, and depend on factors beyond the control of the Department of Economic Development and Tourism.

TABLE 3

NWT Fish Processing/Handling Employment and Income Winter 1990-91- Summer 1991

Plant/Station	Season From	To	Jobs	Income ($)	Estimated # PY's[1]
Mackenzie Delta	Aug	Sept	1 Manager; 4 seasonal on collector vessel; 2 ft. at plant; 4 pt. at plant	[2]$44,900	1.20
Kitikmeot					2.30
Cambridge Bay	mid Aug	mid Sept	1 pt. Mgr and administration, 10-12 labourers	$37,000	
Export Fishery[4]	mid June	early July	7 low, 15 high		
Kitikmeot Interset-tlement Trade	Nov March	Dec May	minimal	$5,000	
Keewatin[3]					2.60
Chesterfield Inlet	late July	early Sept	1 Mgr, 2-3 labourers for plant& collector boat	$16,000	
Rankin Inlet	"	"	1 Mgr, 2-3 labourers	est. $12,800	
Whale Cove	"	"	1 Mgr, 1-2 ft. labourer	est. $12,800	
Arviat	"	"	1 Mgr, 2 labourers	$12,800	
Baffin[5]					
Pangnirtung	Dec	June	1 Manager, 1 bookkeeper, plus 22 labourers on average	$118,425	8.00
Iqaluit	Year round		2 ft. year round plus seasonal labourers as required	$50,000	2.00
Hall Beach	Ott	May	4 part time	$11,200	0.50
Igloolik	Dec	May	1 ft. plus 5 pt.	$20,000	2.00
Arctic Bay	Dec	May	2 ft. plus 5 pt. as required	6$31,000	2.00
Clyde River	Dec	May	Up to 5 seasonal labourers	$15,000	1.00
Great Slave Lake[7]	June Dec	Ott May	7 full time, 16 seasonal	$285,450	15.00
TOTAL			**100-110**	**est. $672,375**	**36.60**

See Notes on following page

TABLE 3 continued

Notes on Wages ft. = full time pt. = part time

1 One person-year (PY) is defined as 40 weeks of employment, as in the Business Development Fund Policy, Schedule B, p. 14.

2 Figure based on 1 Manager, 6 weeks @ $20,000; 6 labourers @ $15.00 per hour, 50 hour per week, 5 weeks; 4 labourers @ $15.00 per hour, 8 hours per week, 5 weeks. •Mackenzie Delta did not benefit from the fish freight subsidy.

3 Manager -$20.00 par hour, 40 hours per week, 8 weeks; labourers - $10.00 per hour, 40 hours per week, 8 weeks.

4 Wage bill figure estimate from region; person yeara baaed on 12 labourers and 1 manager for 7 weeks.

5 Wage bill and person year figures are estimates from region with the exception of Pangnirtung. Wage bill is actual; person year figures is estimated based on 11 labourers per shift, 6 hours per shift, 2 shifts per day, 6 daya per week, 14 weeks, plus management and administration.

6 Of $31,000, approximately $25,000 and $6,000 are derived from fish processing/handling end muktuk processing respectively; only the latter benefits from the fish freight subsidy.

7 Wage bill and person-year figures are estimates from region.

TABLE 4

Projected Changes for Winter 1991/92 - Summer 1992
NWT Fish Processing/Handling

Fishery	Projected Increase or Decrease	Income ($)	Incr (Deer) in Income ($)	PY's	Incr(Decr) in PY's
Mackenzie Delta	same	44,900	0	1.20	0
Kitikmeot					
Cambridge Bay Export Char	43% increase	53,000	16,000	3.30	1.00
Kitikmeot Intersettlement Trade	same	est. 5,000	0	min.	o
Keewatin	same	54,400	0	2.60	0
Baffin					
Nettilling Lake late Aug - early Sept	increase to 4 labourers	110,000	10,000	0.60	0.60
Pangnirtung	increase in hours and income; decrease in # of participants	150,000	31,575	8.00	0
Iqaluit	increase to 4 labourers	75,000	25,000	3.00	1.00
Hall Beach	same	11,200	0	0.50	0
Igloolik	decrease 50%	10,000	(10,000)	1.00	(1.0)
Arctic Bay	increase	35,000	4.000	2.00	0
Clyde River	same	15,000	o	1.00	0
Great Slave Lake	same	285,450	0	15.00	0
Total		**est. 748,950**	**76,575**	**38.20**	**1.60**

[1] Figure basedon4Iabourers@$10.00 per hour, 12 hours per day, 7 days per week, 3 weeks.
[2] Estimated 1 manager, 1 bookkeeper, 15 labourers and 2 trainees; 8 hour shifts for 9 weeks and 10 hour shifts for 6 weeks.

The above noted projections are speculative only, and depend on factors beyond the control of the Department of Economic Development and Tourism.

TABLE 5

Employment and Income in Commercial Fishing and Fish Processing/Handling (all commercial fisheries)

sector	#of Participants	Net Income ($)	Person Years
Fishing	693+	1,153,800	96.0
Fish Processing/ Handling	90-110	672,375	36.6
Total	**approx. 800**	**1,826,175**	**132.6**

TABLE 6

Impact of the Fish Freight Subsidy on Employment and Income[1]

Sector	#of Participants	Income ($)	Person Years
Fishing	668+	1,133,490	94.3
Fish Processing/ Handling	89-99	627,475	35.4
Total	**approx. 789**	**1,760,965**	**129.7**

This table represents employment and income in all fisheries benefiting from the Fish Freight Subsidy.

APPENDIX I
Expense Data by Regional Fishery

Introduction

The following pages show cash flow analyses for seven regional commercial fisheries in the NWT. The information was compiled in order to conduct a comparative analysis of fisheries income. Cash flow, as represented by gross revenues minus operating expenses was calculated for each fishery, as an indicator of the relative wealth flowing to fishermen as a result of commercial fishing effort. This data was subsequently used to calculate person years in the main report.

In most fisheries, subsistence and commercial fishing are carried out simultaneously, utilizing the same equipment. To determine those costs associated with the commercial fishery alone, costs proportionate to the amount of time spent commercial fishing was used. Value of the subsistence catch has not been included because such data is lacking. Consideration of the import substitution value of the subsistence catch would vastly increase the economic value of the fishery.

There are slight variations in the manner in which data is presented resulting from differences in availability of complete and current data. For example, cash flow analyses had been conducted only for the Arviat (then Eskimo Point) and Maguse River char fishery and the Pangnirtung turbot fishery. In other regions no such data has been collected; it was necessary to draw from the expertise of regional personnel who are knowledgeable about the fisheries. Depending on the information available, a cash flow analysis was presented for individual (average or hypothetical) fisherman or the fishery as a whole.

Great Slave Lake represents a deviation to this approach. Net income was determined on the basis of wage and salary expenses as documented in a recent survey report.

To ensure consistency of data between regions certain basic assumptions were made.

1. Only expenses for oil and gas, net replacement, repairs and miscellaneous supplies were included in operating expenses.

2. Food is deemed to be a necessary expenditure, whether fishing or otherwise occupied, and was not included as an operating expense.

3. Depreciation costs of capital were omitted because of the wide range of capital equipment being used within each fishery and between regional fisheries. Moreover, inclusion of depreciation would likely result in skewing of information because of the dirth of accurate information.

4. One person year (PY) was representedby$12,000 net income as defined in the Business Development Fund Policy, Schedule B, p. 14.

5. Throughout the main report, the term net income is used to represent gross income minus expenses (not including depreciation).

Natural Resources Section **June 8,1992**

Mackenzie Delta Fishery
Cash Flow Analysis for an Average Fisherman -1991

	Amount ($)
Gross Income From Fish Sales	1,174
Operating Expenses (3 weeks; 2 return trips to Inuvik) (Commercial use only)	
Oil & Gas	200
Net Replacement	111
Miscellaneous and Repairs	50
Total Expenses*	361
Cash Flow	813
Total Cash Flow All Fishermen	$20,325
# PY's@$12,000 per PY	1.7
Expenses Per Kilogram	$.371

1991 Production

Gross Revenues From Fish Sales	**$29,338**
Total Volume (kg)	**24,332**
Total Expenses @ $.371	**$9,027**
Total Net Income	$20,310
Number of fishermen	**25**
Average Production Per Fisherman (kg)	**973**

Estimated Capital Investment for Average Fishing Operation (used by 3 fishermen)

	($)	Term (years)	% Commercial Use
Cabin and contents	15,000	15	50
Boat	3,000	3	50
Outboard Motor	4,000	3	50
Canoe	500	3	50
Nets	300		
Miscellaneous Gear	700		

Sources: Income data collected in region. Operating expenses and capital investment are estimates from region based on three years observation.

- Expenses do not include depreciation.

Natural Resources Section **June 8,1992**

Cambridge Bay Export Char
Cash Flow Analysis For an Average Fisherman -1991

	Amount ($)
Gross Income From Fish Sales	1,375
Operating Expenses (6 weeks - Commercial use only))	
Oil & Gas	0
Net Replacement ($600/year/33 fishermen)	18
Repairs and Miscellaneous Supplies	0
Total Expenses*	18
Cash Flow	1,357
Cost Per Kilogram	.019
1991 Production	
Gross Revenues From Fish Sales	$45,401
Total Volume (kg)	31,683
Total Expenses @ $.019	$600
Net Income For Fishery	$44,801
#PY's@$12,000 per PY	3.7
Number of fishermen	33
Average Production Per Fisherman (kg)	960

Capital Investment

	($)	Term (years]	- % Commercial Use
Aluminum Boats	n/a	n/a	n/a
Gill Nets	n/a	n/a	n/a
Conduit Weir (Jayco Lake)	n/a	n/a	n/a

Sources: Income data collected in region. Operating expenses and capital investment are estimates from region based on observation.

* Expenses do not include depreciation.

Natural Resources Section **June 8,1992**

Kitikmeot Intersettlement Trade (Char) "
Cash Flow Analysis for all Fisherman (excluding export sales to Co-op) - 1991

	Amount ($)
Gross Income From Fish Sales	32,117
Operating Expenses (6 weeks) (Commercial use only)	
Oil & Gas ($100/load of fish; #trips depends on location)	3,600
Net Replacement	720
Miscellaneous Supplies	0
Total Expenses*	4,320
Cash Flow All Fishermen	27,797
#PY's@$12,000 per PY	2.3
Cost per kg	$.83
1991 Production	
Gross Revenues From Fish Sales	$32,117
Total Volume (kg)	9,080
Number of fishermen	unknown
Average Production Per Fisherman	unknown

Capital Investment

	($)	Term (years)	% Commercial Use
Aluminum Boats	n/a	n/a	n/a
Gill nets	n/a	n/a	n/a
Snowmobiles	5,000	5	10

Sources: Income data collected in region. Operating expenses and capital investment are estimates from region based on observation.

* Expenses do not include depreciation.

Natural Resources Section **June 8,1992**

Keewatin Export Char Fishery
Cash Flow Analysis For a Hypothetical Full-time Fisherman -1988

	Amount ($)
Gross Income From Fish Sales	**5,040**
Operating Expenses (6 weeks, 20 trips) (**Commercial** use only)	
Oil & Gas	500
Net Replacement	400
Repairs (**skidoo** and **komatik**)	250
Miscellaneous **Supplies**	100
Total Annual Expenses For 1988	1,250
Add 10.5% inflation to **September** 1991	131
Total Annual Expenses For 1991 .	1,381
Cash Flow	3,659
Annual Production For One Full Time Hypothetical Fisherman (kg)	1,633
Expenses Per Kilogram	.85

1991 Production	
Gross Revenues From Fish Sales	**$121,869**
Total Volume (kg)	**38,573**
Total Expenses @ $.85/kg	**$32,787**
Net Income For Fishery	$89,082
#PYs@$12,000 per PY	7.4
Number of Fishermen	est. 100
Average Production Per Fisherman (kg)	386
Average Net Income Per **Fisherman**	$890

Capital Investment for Hypothetical Full-time Fishing **Operation**

	($)	**Term (years)**	**%** Commercial Use
Canoe	**$4,000**	**5-6**	**30**
Outboard Motor	**$3,000**	**3**	**30**
50 yard Gill nets (3)	$600	1	30

Sources: Production and income data collected in region. Expenses extrapolated from "An Economic Analysis of the Eskimo Point and **Maguse** River Commercial Char Fishery: Summer 1988" prepared for the Department of Economic Development and Tourism by Lynda **Yonge, Faculty** of Environmental Studies, 1989. Inflation rate based on Consumer Price Index for September 1991 for food and transportation (Statistics Quarterly, Vol. 13, No. 3, September, 1991, p. 27).

-- * Expenses do not include depreciation.

Natural Resources Section **June 8,1992**

Baffin Turbot Fishery
Expenses for an Optimal Two Person Fishing Operation

Operating Expenses (3 months) -1988 (Commercial use only)	Amount ($)
Oil & Gas	1,790
Line Hauler Operation	935
Net Replacement	500
Repairs (skidoo and komatik)	844
Bait	216
Miscellaneous Supplies	0
Total Annual Expenses For Two Person Fishing Operation 1988	4,285
Add 10.5% inflation to September 1991	450
Total Annual Expenses For Two Person Fishing Operation 1991 .	4,735
Annual Production For Two Person Operation (kg)	11,340
Expenses Per Kilogram	.42

1991 Production	
Gross Revenues From Fish Sales	$187,770
Total Volume (kg)	121,675
Expenses @ $.42/kg	$51,104
Net Income	$136,666
#PY's@$12,000 per PY	11.4
Number of Fishermen	est. 100
Average Production Per Fisherman (kg)	est. 1,217
Average Net Income Per Fisherman	est. $1,367

Capital Investment for Average Fishing Operation

	($)	Term (years)	% Commercial Use
Snowmobile	6,000	3	40
Motorized Line Hauler	3,000	10	100
Komatic	300	5	
Fishing Gear	500	1	1 ; ;

Sources: Production and income data collected in region. Expenses extrapolated from "Pangnirtung Winter Turbot Fishery", prepared for the Department of Economic Development and Tourism by Canadian Fishery Consultants Limited, 1988. Inflation rate based on Consumer Price Index for September 1991 for food and transportation (Statistics Quarterly, **Vol. 13,** No. 3, September, 1991, p. 27)

• Expenses do not include depreciation.

Natural Resources Section **June 8,1992**

Baffin Char Fishery (Intersettlement Trade)
Expenses for One Person Fishing Operation

Operating Expenses (6 weeks) -1988 (Commercial use only)	Amount ($)
011 & Gas	895
Net Replacement	250
Repairs (skidoo and komatik)	422
Miscellaneous Supplies	300
Total Annual Expenses For One Person Fishing Operation 1988	1,867
Add 10.5% inflation to September 1991	196
Total Annual Expenses For One Person Fishing Operation 1991	2,063
Annual Production For One Person Operation (kg)	2,268
Expenses Per Kilogram	.91

1991 Production	
Gross Revenues From Fish Sales	$167.585
Total Volume (kg)	51,361
Expenses @ $.91/kg	$46,739
Net Income	$120;846
# PY's @ $12,000 per PY	10
Number of Fishermen	est. 160
Average Production Per Fisherman	est. 321
Average Net Income Per Fisherman	est. $755

Capital Investment for Average Fishing Operation

	($)	Term (years)	% Commercial Use
Snowmobile	5,000	3	40
Komatic	300	5	40
Nets	1,000	1	n/a
Fishing Gear	500	1	n/a
Aluminum Boat	?	?	?

Sources: Production and income data collected in region by telephone survey to producers. Expenses extrapolated from "Pangnirtung Winter Turbot Fishery", prepared for the Department of Economic Development and Tourism by Canadian Fishery Consultants Limited, 1988. Inflation rate based on Consumer Price Index for September 1991 for food and transportation (Statistics Quarterly, Vol13, No. 3, September, 1991, p. 27)

- Expenses do not include depreciation.

Natural Resources Section **June 8,1992**

Great Slave Lake Commercial Whitefish and Trout Fishery

A Cost and Earnings Study of Great Slave Lake (GSL) fishermen conducted during 1990 and 1991 concluded that on average, operational expenses of the fishery exceeded revenues. This makes a pointed statement about the economics of the fishery. The fishery is highly subsidized and would not be viable without the support of the GNWT. However, part of this result is no doubt attributable to the source of information, namely income tax returns, which would tend to overstate expenses.

To address the problem of possible exaggeration of expenses a different approach was used in determining net income for the GSL fishery than that adopted for other fisheries. Wages and salaries expenses were documented in the survey report for 49 of the 57 fishing operations on GSL. These figures were used to determine estimated net income. Since the survey is relatively recent, costs were considered to be current.

Production

Season	#of Operators	Volume (kg)	Gross Revenues ($)
Winter 1990/91	51	598 981	818 114
Summer 1991		889:140	817:639
Total	1:;	1,488,121	1,635,753

Average Expense Per Fishing Operation For Wages and Salaries	$15,263
Average Expense per Kilogram of Production For Wages and Salaries ($.22/lb)	$.48
Estimated Net Income For All Fishing Operations Winter 1990/91 and Summer 1991	$714,298
#PY's@$12,000 per PY	59.5
Number of Fishermen	300
Average Production Per Fisherman (kg)	4,960
Net Income Per Fisherman	2,381
Average Production Per Operator in Winter (kg)	11,745
Average Production Per Operator in Summer (kg)	15,330
Average Gross Revenues Per Operator in Winter	$16;041
Average Gross Revenues Per Operator in Summer	$14,097

Capital **Investment** in GSL Fishery

	# Owned by **47** Operators	**($)**	Term (years)	**% Commer-** cial Use
Whitefish Boat	**14**	**n/a**	**n/a**	**n/a**
Skiff	**27**	**n/a**	**n/a**	**n/a**
Yawl with Inboard Motor	**1**	**n/a**	**n/a**	**n/a**
Yawl with Outboard Motor	**14**	n/a	**n/a**	**n/a**
Outboard Motor	**33**	**n/a**	**n/a**	**n/a**
Bombardier	23	n/a	**n/a**	**n/a**
Bombardier Motor	20	**n/a**	**n/a**	**n/a**
Snowmobile	29	**n/a**	**n/a**	n/a
Auger	**12**	**n/a**	**n/a**	**n/a**
Truck	**34**	**n/a**	**n/a**	**n/a**
Miscellaneous Equipment	**n/a**	**n/a**	**n/a**	**n/a**
Nets	**n/a**	n/a	**n/a**	**n/a**

Sources: Production figures collected by region from David Bergunder of Freshwater Fish Marketing Corporation. Expense data and capital investment was extracted form the "Great Slave Lake Fishery **Survey**: Overall Results" published by the Bureau of Statistics, **GNWT**, 1991, Tables 4.6,4.7 (p. 41), Table 5.1 (p. 57) and Table 5.2 (p. 58).