2 Renewable Resources

The evidence before this Inquiry has clearly established the importance of renewable resources in the northern economy. This sector of the economy has provided and must continue to provide native people with employment and income and, therefore, we require adequate knowledge of its present status and future potential. Yet the statistical evidence on the use of renewable resources that was presented to the Inquiry was incomplete, inadequate and sometimes confusing. I have, therefore, asked my staff to compile and analyze the available data for the Mackenzie Valley and Western Arctic. They have brought together a great deal of valuable information including data from the region under study and from elsewhere that has become available since the hearings of this Inquiry ended. In the first two sections of this chapter, I have used these recent data and other information, in addition to evidence presented to the Inquiry, to review the data base and to analyze the production of and trends in the traditional economy.

In Volume One, I pointed out that the present lack of data is an indirect consequence of government policy; that is to say, the government, having decided that renewable resources did not provide a sufficient basis for economic development in the North, has made no attempt to estimate the present or potential contribution of these resources to the northern economy. So the tendency to ignore the potential of the renewable resource sector was reinforced. I therefore thought it worthwhile to prepare this discussion of the measurement and the production of the traditional economy. Game managers and wildlife biologists have long been aware of many of the shortcomings in the data that they have helped to record, and they may find little that is new in the ensuing discussion. It is clear from the submissions made to the Inquiry, however, that few economic analysts who have considered the northern economy have shared that awareness.

Most economic analyses are flawed by one or more of three major methodological errors. First, participation in the traditional economy is underestimated because employment in it is, in effect, defined to include only those activities that generate cash. Secondly, the volume of production is underestimated because of a frequently uncritical reliance on the government's fur and game statistics — figures that were not specifically designed to measure and, in fact, do not measure the total harvest. Thirdly, even if replacement costs are used as the basis for imputing value to country produce (and by no means all analyses do that), both the identification and evaluation of appropriate substitute commodities are incorrect because neither measurable nutritional differences nor intangible factors of culture and taste are properly taken into account. These errors combine to produce estimates that may be as little as a tenth of the real gross value of fur, fish and game production. Methods used to measure economic performance in an industrial society clearly do not work well when they are applied to a mixed economy with a significant domestic component.

The economic evaluation offered here is by no means intended to be the last word on the measurement of the traditional economy. The data sources are so doubtful, and there are so many compounding sources of error, that a wide range of estimates are at present possible. In presenting this evaluation, I am trying to provide a framework or a model for analyzing the native economy, and I also make some recommendations for the improvement of the methods of data collection.

In the third part of this chapter, I examine the potential for renewable resource development. The discussion is necessarily tentative because information that we have on the actual resource base is so limited. I am also concerned with the objectives of renewable resource development, particularly with the potential that may exist for processing and marketing, and I examine the implications of such development for employment and income in the North.

Finally, I review the problems that have bedevilled renewable resource development, both now and in the past. It is not my proper role to make specific recommendations for development — that would usurp the local initiatives that will be so essential to its success and to encroach upon areas that should be negotiated as part of native claims. Instead, I

outline the context in which renewable resource development must occur and the criteria that any specific endeavour must meet, if it is to be successful in the long run. My chief concern here is that the development of renewable resources should go forward with native initiative and under native control. Governments ought to supply financial and technical assistance, but they should play a supporting rather than a leading role.

Inadequacies of Existing Data Bases

Any assessment of the productivity, value and significance of the traditional sector of the economy in northern Canada must be based on accurate statistical data. They in turn must be based on precise, agreed definitions of terms and of the purposes for which the data are collected, and on an efficient and workable system for collecting and maintaining the data. It is a measure of the neglect of the traditional economy in the development of public policy that neither of these requirements can, at present, be met. Very simply, there exist no systems for the regular collection of data that can provide simple, accurate indications of the numbers of people participating in the traditional sector of the economy, or of the volume or value of their produce. As a result, a variety of statistics and estimates have been placed before this Inquiry; on inspection, they differ in purpose and definition as well as in their absolute numbers. It is important, therefore, to examine the nature and causes of these differing estimates and to resolve these differences, so far as possible, to provide a clearly understandable statistical assessment of the traditional sector today.

Participation in the Traditional Economy

The wide variation in the estimates of the number of trappers in the Mackenzie Valley placed before this Inquiry (96 by Arctic Gas, 1,075 by the Indian Brotherhood of the Northwest Territories) was noted in Volume One. We saw there that the problem was one of fundamentally different definitions, rather than one of simple enumeration, and that neither the number of people defined occupationally as trappers nor the number defined by adherence to a way of life as trappers provides an adequate measure of the degree of participation in the traditional economy. Yet to judge the performance of that economy, it would be helpful to know how many people participate in it and benefit from it.

Unfortunately there are no precise estimates of the native population or of the native labour force in northern Canada at either the community or the regional level. In an examination of all of the censuses conducted by public authorities or private agencies in recent years, we find widely but inexplicably differing results. Few of these censuses explain their definitions or methodology. In Volume One, I estimated that there are about 15,000 native people in the Mackenzie Valley and Western Arctic. Discounting for natural increase, the figure for 1972-1973 would have been a little less than 14,000. I shall use this figure for purposes of comparison with other data presented later in this chapter.

Estimates of the labour force are as inadequate and inconsistent as figures for population. If we assume that half of the native population is male, and that half of that population is under the age of 16, then the available male labour force may be estimated to be 25 percent of the native population or slightly less, if we discount for old people. This calculation suggests a native male labour force of about 3,000 for the region as a whole.

We can compare this figure with the number of General Hunting Licence holders, the number of people who trade furs, and the number who earn at least $400 annually from fur sales. These figures are presented in Table 1.1.

In considering these figures as indicators of participation, the following factors should be kept in mind. General Hunting Licences are issued annually free of charge, but not automatically, to native people. Usually, members of the immediate family are permitted to hunt on the licence of the head of a household. If everyone eligible to hold a General Hunting Licence actually obtained one, the number issued would be approximately the same as the number of native males of working age. Because the hunter must obtain the licence on his own initiative, it seems likely that those who do so actually exercise their hunting rights. It is possible that some people obtain General Hunting Licences for purely symbolic reasons and do not actually hunt, but I think their number – if any – is insignificant for the period under discussion. Available evidence suggests that, on average, at least one person per household obtains a General Hunting Licence, but there are no good figures for the number of native households in the Mackenzie Valley and Western Arctic.

Table 1.1 suggests that about three-quarters of the native males of working age in the region engage in at least some hunting, although not all of them provide the major part of their families' diets by hunting. We can assume that some of the food these hunters obtain is distributed to families that do not have active hunters, but again there is no basis for estimating the number of such families or the quantity of food they receive.

So far we have been discussing estimates of the number of native people engaged in hunting for food for themselves and their families. Now let us look at the native people engaged in trapping for fur, that is, for cash. The number of people who trade furs does not necessarily indicate the number of them who actually harvest furs. The number may be an overestimate because furs may, through a variety of circumstances, be given to non-trappers or an underestimate because furs trapped by members of a household may be traded for sale through the head of the household. The former consideration probably outweighs the latter, so that perhaps only about half

of those who hunt also obtain furs (the number of hunters, if any, who obtain furs but no meat must be insignificant). If hunters who obtain furs solely from the spring muskrat hunt and hunters who set only a few traps at the edge of town are excluded, perhaps about one-quarter of those who hunt also set trap lines.

In the entire region under consideration, the number of trappers who earned over $400 in 1972-1973 was probably about 450 or about 15 percent of the native males of working age. In 1975-1976, however, 764 trappers in the region, or about one-quarter of native men, earned over $400. This difference is chiefly a reflection of increased fur prices, for the same level of effort would place more trappers over this mark, but it may also indicate increased participation, perhaps in response to market conditions or to a revival of interest in trapping.

Clearly, there are many more participants and, indeed, many more significant participants in the native economy than a census of those whose primary occupation is trapping would suggest. Equally clearly, only a minority of those who identify themselves culturally as trappers in fact earn their living, or even the greater part of their living, by trapping, although hunting is economically important to the great majority of them.

Unfortunately, I have no direct measurements with which to confirm these observations. I refer to the native economy, yet there are no standard figures for the numbers of native people who are the primary participants and beneficiaries of that economy. The basic unit of production in the native economy is the family or household, yet there is no standard, reliable census of households. Any analysis of the native economy must take into account the number of people who are actively engaged in fur, fish and game harvesting, and the extent to which they are involved in it. Yet there is not even a commonly accepted definition, let alone an enumeration, of these people. We can only make inferences from other forms of data that are available, but they are a poor substitute for the information that is really needed. Such inferences and estimates are subject to many kinds of error, only some of which have been described above. Put simply, no one can provide a clear picture of the participation of the native people in the traditional economy on the basis of the available information.

The Volume of Production

In economic terms, the volume of production is the number of animals taken by hunters and trappers that are potentially useful to them. This number is in contrast to the harvest as defined by a game manager: the total number of animals cropped from a population by hunting or trapping. Our statistics do not, therefore, include animals lost through wounding, waste or predation before retrieval. They do, however, include animals that may be lost through spoilage or otherwise made unusable or unsaleable after retrieval. By retrieval is meant the use, storage or consumption of an animal at or near the site of the kill or the loading of all or part of the animal for transportation elsewhere for its subsequent use, consumption or sale.

The only uniformly and continuously maintained series of statistical data on wildlife harvests in the Northwest Territories are the Fur Export Tax Returns and the General Hunting Licence Returns kept by the territorial Fish and Wildlife Service. Both of these returns are aggregated annually by community. Officially compiled annual summaries of fur exports have been maintained since 1953, and statistics for hunting kills are available from 1963 onwards, although data have been obtained under ordinances made for both subjects since about 1930. Earlier tabulations are available, but they are generally less complete. Annual reports on game compiled by RCMP detachments are undoubtedly a valuable additional source of information, but they are not summarized by community and year and they were discontinued after 1972. In any event, they have not formed the basis of any presentation to this Inquiry on the volume of country food production. There are other, independent observations or sources of data on country food, but they are sporadic in time and place, of varying quality and reliability, and they are, therefore, rarely comparable.

Virtually all of the evidence on the production of country food placed before the Inquiry was based on the two series of returns maintained by the Fish and Wildlife Service of the Government of the Northwest Territories. Gemini North and the Environment Protection Board used these statistics unquestioningly. Dr. Michael Asch and Scott Rushforth, on behalf of the Indian Brotherhood of the Northwest Territories, and Dr. Peter Usher, on behalf of the Committee for Original Peoples Entitlement also used these two series, although all three witnesses questioned their validity. Usher made some estimates of the direction and magnitude of the bias of these figures, and both Rushforth and Usher provided some of their own field data.

Several government reports that provided important background material for this Inquiry also relied on the statistics of the territorial government, in every case without questioning their validity or adjusting them for possible error. These reports include two by Don Bissett on native resource use (one of which was prepared under the auspices of the Economic Staff Group), one on Old Crow by John Stager, all for the Environmental-Social Committee, and two earlier reports on the native economy by Chang-Mei Lu and John Palmer of the Economic Staff Group of the Department of Indian Affairs and Northern Development. Gemini North relied heavily on Bissett's work in particular.

The Fish and Wildlife Service statistics clearly provided the primary basis for measuring the production of the native economy, but do these figures really measure those harvests? Usher has emphasized that, in fact, they only approximate the

actual fur and game harvests, and he examined the causes of their errors (Exhibit F656). More recent research on wildlife harvests in the Mackenzie Valley (Usher, 1977) and northern Quebec (James Bay and Northern Quebec Native Harvesting Research Committee, 1976) now enable us to assess the magnitude of error in these official statistics in more detail. The information from northern Quebec is particularly relevant, because of the attempt to deal practically with this problem in an adversary situation.

The fur export tax was first levied, as its name implies, on furs exported from the Northwest Territories to raise revenue to offset the administration costs; since 1967 the tax has been nominal, and the requirement for an export permit has been retained solely for the purpose of collecting data. These returns have always been the best indicator of the fur harvests in the Northwest Territories, and they have, therefore, been the basis for the official figures on territorial fur production. That, however, was not the primary reason for keeping these figures, and neither these returns nor any other existing system of keeping records was designed explicitly to measure the actual harvest of fur.

The purpose of the General Hunting Licence in the Northwest Territories has always been to control access to fur and game resources. Because the licence is supposed to be turned in at the end of each year, together with a declaration from memory of the holder's harvest of big game and birds (and, until 1961, of fur), it has also served as a means of keeping records. However, the requirement to turn in the licence is not enforced.

These systems of collecting data cannot be criticized for failing to reveal information that they were not designed to elicit, but anyone who uses the data they supply for different purposes should understand the risks in doing so. Clearly, both the Fur Export Tax Returns and the General Hunting Licence Returns have an inherent bias toward underestimating harvests because they record only furs exported raw and whatever big game and birds that the licence holders declare. We can examine the sources and magnitude of this bias on a species-by-species basis. Table 1.2 lists the economic species of wildlife and fish harvested in the Mackenzie Valley and Western Arctic with which we are concerned in this report. Other species are occasionally harvested, but they invariably constitute an insignificant proportion of the total volume of production. The discussion of the errors inherent in official statistics is limited to the figures gathered since 1965.

FURBEARERS

The volume of production of furbearing animals is approximated from summaries of the Fur Export Tax Returns. These returns do not include furs that are not recorded as exported from the Northwest Territories. Furs may be retained in the Northwest Territories for various reasons. Pelts retrieved by trappers that are of poor or unsaleable quality may be used for domestic clothing or handicrafts, or they may be discarded. In some cases the meat of the animal is used, even if its pelt is not. Good quality pelts may be retained for domestic use, either in clothing or in handicrafts. The most popular furs for clothing are muskrat, beaver, lynx, coloured fox, wolf, coyote and wolverine, although fur preferences vary by region. The pelts of muskrat and white fox are probably the most commonly used in handicrafts. If there are quotas on the sales of pelt, the proportion of furs used domestically is likely to increase, and the number of furbearers taken only for food may also increase. Because export permits are required only for raw furs, it is of interest to note that, should a tannery be established in the North, furs exported after being worked would not be recorded under the present system.

In addition, as public transportation has improved in the North and as more and more outsiders have come to the North for work or pleasure, the scope for private sales by trappers has greatly increased. When the Fur Export Tax ordinance was enacted in 1929, furs were shipped out of the Northwest Territories only by water and there were but two export points for the entire region: Herschel Island and Fort Smith. The passage of people and pelts through these centres could be closely observed and controlled. Fur was then the basis of the regional economy and regulations concerning the fur trade were common knowledge. Today a trapper in even the most isolated settlement can sell furs to tourists or transient workers for good prices and immediate cash. There is no reason to suppose that deliberate smuggling of furs out of the Northwest Territories is or ever was widespread, but the number of pelts exported or sold in ignorance of the regulations is almost certainly increasing. The fact that tanneries in the South will not accept improperly tagged furs for processing must, however, act as a brake on this tendency.

How insignificant are these factors in relation to the total fur harvest? No accurate answer can be given without an intensive survey that would involve a large sample of trappers. Rushforth gave in evidence some estimates of the differences at Fort Franklin, and other unpublished information provides further indications.

In Table 1.3, the error in officially recorded figures for the fur harvest of each species is estimated for the Mackenzie Valley and Western Arctic as a whole, taking into account domestic retention only. These estimates are conservative and based on very limited information; they take no account of unreported exports, which cannot be estimated. All analyses of official records, including my own analysis, indicate a substantial decline in the number of furs taken in most of the Mackenzie Valley during the early 1970s. We cannot rule out the possibility that at least a part of this decline may be attributable to leakage in the form of unreported exports; if such is the case, trends in fur production will become more and more difficult to identify in the future. This example is but one of many to show how systems to collect economic data that were designed for the closed economy of yesterday's

North can no longer work in the more open and fluid economy that prevails today.

For comparison, Table 1.3 shows the estimates of error by species between official records and observed harvests in northern Quebec. In all cases, they are much higher than our own estimates for the Northwest Territories, and they are much more thoroughly documented. The research in Quebec is being carried out in connection with the James Bay and Northern Québec Agreement, and the question has assumed considerable significance. No doubt there are important differences in the official means of recording the fur harvest in the two jurisdictions, but the discrepancies in northern Quebec are so remarkable as to warrant a thorough review of the data base in the Northwest Territories.

The export of seal pelts has been recorded officially only since 1971, whereas local sales have been recorded since 1961. The same downward bias in recording applies, chiefly because of their use in handicrafts, but there are even greater discrepancies in the records for the total seal harvest. They are discussed below in the subsection on marine mammals.

BIG GAME

The kill statistics derived from General Hunting Licence Returns provide the basis for estimating big game harvests, except for muskoxen. Bear harvests are recorded by both General Hunting Licence Returns and Fur Export Tax Returns. There are quotas allocated by settlement on the harvests of both muskoxen and polar bears. Both quotas are normally filled, so recent harvests of these animals are assumed to be equal to the total of the quotas for the region, except where reliable records indicate otherwise. No polar bear hides, and probably no muskox hides, are retained for domestic purposes.

The Fur Export Tax Returns records do not distinguish between black and brown bears, although the General Hunting Licence Returns records do. Because the dominant proportion of the harvest is composed of black bears, the two species are combined for the purposes of this report. There appears to be a considerable retention of black bear hides for domestic use, because the General Hunting Licence Returns bear harvest totals are generally much larger than the Fur Export Tax Returns totals. Even the former totals, however, must be underestimates because of incomplete reporting.

Harvests of the ungulate species are all calculated exclusively on the basis of General Hunting Licence Returns declarations. These species provide a substantial proportion of the food supply for most communities, so it is important to appreciate the downward bias of their numbers in the official records because of non-reporting, non-recording, and misreporting. First, because not all licence holders make the statutory declaration, reporting is incomplete. Secondly, a hunter's declaration of his entire year's harvest is made wholly from memory, although the Fish and Wildlife Service has attempted at times to provide simple recording aids to licence holders. Thirdly, there may be deliberate underreporting of some harvests, particularly of caribou and geese, if the native people fear that the authorities may be thinking of restriction or regulation of hunting.

All of these considerations bias downwards the official statistics for wildlife harvests. How far downward cannot be said for certain without more extensive research, although we do have some indications. For the years 1968 to 1973, the Fish and Wildlife Service has figures on the numbers of general hunting licences returned as well as issued, and these numbers are summarized in Table 1.4. The non-reporting rate is clearly high, and it is apparently increasing. It is impossible to know if non-reporting occurs at random, therefore I cannot simply apply these percentages in compensation to the kill statistics. For example, it may be that non-reporting is more common among less active hunters. The bias caused by non-recording is probably very small for big game species, for the great majority of hunters remember easily and accurately the number of such animals they have taken. Much more difficult to gauge is the magnitude of deliberate underreporting, because there is no direct evidence about it. Of the three factors taken together, however, non-reporting is undoubtedly the most important cause of downward bias for the harvest of big game.

Some evidence has been offered on the total difference between reported and actual harvests. Table 1.5A compares Rushforth's figures on Fort Franklin caribou harvests taken from interviews with those reported in the kill statistics. If Rushforth's data from Fort Franklin are indicative, then less than half of the caribou taken are recorded by the kill statistics. This difference is probably not equally great throughout the region as a whole because the percentage of General Hunting Licences returned is higher in most of those settlements, such as Rae, that account for the bulk of the regional caribou harvest.

Table 1.5B provides a comparison between Dall's sheep harvests, as determined by interviews, and those accounted for in the kill statistics. The interviews covered a substantial proportion of the total sheep harvest, and they may be representative of the region as a whole. No comparable estimates are available for moose, but, because moose kills are both memorable and widely reported locally, the bias in official statistics must be largely restricted to non-reporting. Bison are harvested under quota, and the reported totals for them are close to the allowable limit.

BIRDS

Four categories of birds are tabulated in the kill statistics: ducks, geese, ptarmigan and grouse. They comprise almost all of the birds harvested by native people. All the same reasons for the downward bias in the official statistics for big game are true of birds, but to a greater degree, because non-recording of bird harvests is much more prevalent. Hunters are less likely to keep an accurate mental count of bird kills

than of animal kills, especially for ptarmigan, grouse, and probably ducks; these birds are usually obtained incidentally in the pursuit of other game and many may be taken by several members of a family under one licence. Geese are the objects of special hunts, so the numbers of them taken are more likely to be remembered – but here again the native people have reason to underreport their harvests. The kill statistics for birds are, therefore, highly unreliable. Table 1.6, which shows Rushforth's data based on interviews and some comparative evidence from other parts of the North, indicates that the actual harvests of birds are much higher than the kill statistics indicate.

OTHER SPECIES

We must also consider here the harvests of species that the official fur and game statistics fail to record and that most other studies have also ignored, no doubt for that reason.

In the Beaufort Sea region, marine mammals are important. The number of sealskins traded or exported are recorded, with the same errors noted above, but these numbers by no means tell the whole story. Many seals are used for food (chiefly dog food), the skins of which are not traded. Dr. Tom Smith's evidence from Holman, presented in Table 1.7, suggests that the difference between seals harvested and sealskins traded is substantial. Yet there are no consistent data on the actual harvest of seals as opposed to the trade in sealskins. The ratio of seals taken to sealskins sold varies significantly with price, and in interpreting Table 1.7, it should be kept in mind that prices were relatively much higher in the mid-1960s than in the 1970s. It is not possible, therefore, to suggest a reliable conversion factor by which the actual harvest may be estimated from official records. The harvest of white whales is recorded informally by the federal Fisheries and Marine Service, and their totals appear to be reliable, although they do not provide a consistent geographical break-down.

Throughout the region, fish are a major food resource, yet there is no regular tabulation of the catch nor even a uniform – let alone an adequate – methodology for making one. Occasional surveys of varying reliability have been conducted. Usually the catch is recorded by weight, but in some cases only the numbers of fish are recorded. The available data for some areas are apparently incomplete, so they would lead to an underestimation of the regional total. Because the techniques of observation and recording are never clearly stated, other causes of bias, and whether the bias is upward or downward, are not known.

Another important food source, particularly in the Mackenzie Valley, is hare. So far as I can find, there is not a single quantitative estimate of the hare catch in any part of the Mackenzie Valley and Western Arctic, except for Banks Island, where the catch appears to be far smaller than anywhere else. Yet, by all accounts, hares form a significant part of the diet among the Dene. Here again, estimates from the James Bay region may be useful. Hares are cyclic in abundance and, according to Martin Weinstein (1975), they provide between near zero and 25 percent of the total country food harvest at Fort George, depending on the point in the hare's population cycle. These considerations suggest that it would be appropriate to add perhaps five percent to the total weight of food calculated from the harvest of all other species to represent hare meat. The proportion would probably be lower in some communities, particularly those north and east of Great Slave Lake, where caribou form a large part of the diet, and on the Arctic coast, where the consumption of hare meat seems to be relatively low. Finally, we have no data whatever, and there are no estimates, on other supplies of country food, including eggs and plant products.

TOTAL NUMBERS OF ANIMALS

I should emphasize that this discussion of statistical recording so far concerns the Northwest Territories. It may not apply equally to the Yukon, although the Alaska Highway Pipeline Inquiry found that data on the traditional economy there was also inadequate. In the statistical tabulations given in the second section of this chapter, I have applied correction factors for the Northwest Territories to data from Old Crow. Because about 95 percent of the wildlife harvest we are examining is from the Northwest Territories, any different bias that affects the Yukon figures should not significantly affect the totals given here.

Table 1.8 provides estimates of error in the kill statistics for big game and birds. They are conservative estimates, based on the information and inferences discussed above. I believe that more accurate estimates based on adequate research will prove in every case to be higher.

Once the number of animals harvested is known, the next problem is to determine how much food they have produced. This answer is most easily calculated as the sum of the products, for each species, of the numbers taken and the average edible yield by weight per animal.

THE AVERAGE EDIBLE YIELD OF ANIMALS

There are no uniform, reliable measurements of the average edible yield of northern fur and game animals because of inadequate field data and lingering problems of definition. There are relatively few actual measurements of live or component weights of northern animals. A common technique for estimating the edible weight of an animal has been to use a set percentage of its live weight, based on estimates from meat packing houses (for example, 50 percent of the live weight of cow-shaped animals and 70 percent of the live weight of pig-shaped animals and of birds). The James Bay Research Committee calculated food weight value as the product of the average whole weight multiplied by the percentage of the whole weight that is convertible to food. Yet for some species, especially some of the larger mammals, there are very few records of their live weights.

Here are some of the problems in attempting to make useful estimates of average edible yields. First, different populations or races of the same species may have different growth curves and average sizes. The averages for one population may not, therefore, apply to another.

Secondly, the concept of the average individual live weight of population has relatively little meaning unless it can be related to the actual harvest. Some live weight records for big game, for example, have been obtained largely from specimens killed by sports hunters. Such records usually refer to the oldest males in the population. Native hunters, on the other hand, may select younger age classes or females. The age-sex composition of the subsistence harvest varies both geographically and culturally. An accurate weight index would, therefore, require two sets of data: the mean weights for males and females of each age class in a population, and an age-sex break-down of the subsistence harvest of that population. Rarely is either set of data available.

Thirdly, the relation of edible yield to live weight must be established. Ignoring cultural preferences for the moment, to establish this relation will require accurate data on the component weights of each species in terms of meat, fat, bone and edible and inedible viscera. Seasonal variations in these components, particularly of fat, and the seasonal break-down of the subsistence harvest must be known, because the weight and condition of every species varies significantly throughout the year. Certain definitions must be agreed on: for example, should edible weight include the bone-in portion of the dressed carcass. There is no general agreement on this point in the literature, nor are the methodology or the data recorded uniform. Adequate data on component weights would enable us to calculate potential edible yield, as well as actual edible yield, according to cultural preference. In the absence of such data, many researchers have used the standard meat packers' estimates referred to above.

Finally, cultural preferences and practices must be known in order to estimate the actual edible yields of animals. It is generally agreed that native people use more parts of an animal than are culturally preferred by southern Canadians. Conversion factors must, therefore, take into account the possible use of heads and some organs that are not accounted for in the packing house estimates. Native butchering techniques and native use of an animal varies with time and place. Information on these matters is sporadic at best.

Despite these problems of definition and of measurement, three attempts have been made to summarize existing knowledge of edible yields of northern animals. They were made by Don Foote (1965), Peter Usher (1971) and the James Bay and Northern Quebec Native Harvesting Research Committee (1976). Of these three, the last is the most reliable, because it is the most thoroughly considered and it is based on the most recent available data. The Committee's criteria for determining edible weights also have the merit of being the joint and agreed result of research undertaken by adversary parties in a situation involving conflict over resource use. Accordingly, unless otherwise specified, these criteria and figures are used in this analysis. Their acceptance by disputing parties does not automatically make them scientifically correct, of course, and the Committee has stated that a conservative interpretation of conflicting evidence has been the rule. For species not found in the James Bay region, or when the data from James Bay have not been applicable, other sources of information have been used. No figures are given here for individual fish species because the harvest records of fish are generally available by total weight rather than by numbers.

Table 1.9 provides the best estimates of the average edible weights of each species for each of the five regions discussed in this analysis. These weights are used to determine the amount of food produced by the native economy. The total harvest weights derived by this means (shown in Tables 2.5, 2.6 and 2.7) refer largely to flesh, as opposed to fat. The specialized food yields of animals that are high in fat, that is, marine mammals, are considered separately and are not included in the weight totals. The figures for average edible yield do not take into account waste or cultural variations in the use of parts of the animal.

Existing analyses of native food harvests have not been consistent in their use of conversion factors for edible weights, which has added to the confusion. The conversion factors used here should in all cases supersede those used in previous government reports and in earlier submissions to this Inquiry. The conversion factors previously used have shown no consistent directional bias, so recalculation of previous work using the present conversion factors will not consistently produce higher or lower results. The objective in recalculating previous work is to move toward uniformity of analysis.

1. There is a need to devise a standard methodology and to obtain data through field surveys.

The Value of Production

FUR

The primary source of data for the value of the fur harvest in the Northwest Territories is the Traders Fur Record Books, which record all of the furs bought and the prices paid by licenced fur dealers in the Northwest Territories. The average price per pelt paid to trappers is calculated from these data, and the total value of the harvest of each species is calculated by multiplying the total pelts by the average price. This calculation provides an underestimate of the income to trappers for several reasons.

The calculation does not take into account the substantially higher prices received by trappers who export their furs directly to auction or who take advantage of the Northwest Territories Fur Marketing Service. In some communities, a high proportion of the furs taken is marketed through these outlets. The calculation does not take into account private

sales to local non-natives and tourists, for which usually substantially higher prices are realized. Also, it does not take account of the fact that trappers who divide their sales among local dealers, auction houses and private sales probably tend to reserve their poorest furs for the local dealers. The average quoted prices in the Northwest Territories may therefore refer to the lower grades of fur, and this may explain why these figures are consistently below the national average prices listed by Statistics Canada.

Without extensive further research, I cannot accurately estimate the magnitude of these causes of error, but the error could well be of the order of 10 percent.

FOOD

No one method is used consistently to evaluate the production of country food. Because this food rarely enters the market place, its value can only be imputed. The general principle that its imputed value must be reckoned on the basis of the cost of substitution was clearly established at this Inquiry on the understanding that we are dealing here with a question of economic welfare rather than one of the market value of production.

There is less general agreement on what, in fact, constitutes an appropriate substitute for country food and how to impute a price to it. Imported red meats appear to be the closest possible substitute for big game, imported domestic fowl for birds, and imported fish for local fish. Yet imported red meat and domestic fowl are not directly comparable to wild meat. Quite apart from such immeasurable qualities as preferences of taste and of cultural significance, they are not identical in nutritional content, particularly protein. Drs. Otto Schaefer and Peter Usher provided evidence to show that the protein content of country meats is significantly higher than that of their domestic counterparts. What is not clear from their evidence or from the supporting literature is the comparability of the samples from which the measurements were made. Although the weight of evidence clearly indicates the superior protein value of country meat, we must be cautious in using specific figures. It is not clear whether the higher percentages of protein reported for country meats are due to the absence of marbling in the flesh, or whether the protein content of wild flesh is higher than that of lean beef. Standard grade beef is reported to have a much higher protein content than prime grade beef.

2. *There should be an index of protein and fat, as a proportion of either the whole body weight or of the total edible weight of meat, uniformly defined, of all major wild and domestic species, as well as an index of the protein and fat content of directly comparable cuts of wild and domestic meats.*

Very few of these data are at present available. Accordingly, it may not be legitimate to apply a correction factor to imported meat prices to account for protein differences, so estimated values must at present be considered to be tentative.

3. *Other nutritive differences (in addition to fat and protein) between wild and domestic meats should be examined and accounted for, including the absence of hormones and chemicals in the former and possible differences in the composition of fatty acids.*

How do we determine the price of a substitute commodity? Usher used an approximate average of the per pound prices of whole meat cuts sold in Western Arctic food stores because they were the only available substitutes for country meats. Counsel for Foothills argued that a more appropriate price would be the average per pound delivered price of a side of beef. Foothills' argument is correct in that the relative price of individual cuts of meat reflects southern Canadian rather than native food preferences. On the other hand, as Usher argued, whole sides of beef or pork are neither actually nor practically available to native people in their present working and living conditions. The use of store prices for butchered meat can be made only in a situation where it is the only available substitute. Should imported red meat become cheaper through availability in bulk, or should locally produced meat, such as reindeer or commercially hunted game, become widely available, then the relatively high prices yielded by Usher's approach given in Table 1.10 would have to be revised downwards. Present or revised price equivalents, however, are used here only as a measure of the welfare contributed by harvests of country food, not as an index for compensation in the event of the loss of these resources. Despite these reservations, we have no alternative to using the prices of current, locally available substitutes to impute a value to Mackenzie Valley and Western Arctic food production. Ideally, country produce should be evaluated according to local substitute prices. In the absence of other specific data, we have applied prices in the Mackenzie Delta Region to all regions, except Great Slave Lake, where they have been reduced by 15 percent. This procedure reflects current cost of living indices by community.

When imputing values to determine income in kind, that is to say, as a measure of welfare, it is necessary to deduct the cost of production from the gross values. But these data, too, are rarely available, and their general applicability is uncertain. Usher suggested in evidence, on the basis of very limited data, that production costs might equal about one-quarter of the gross value of the product. This suggestion is approximately consistent with information from Grise Fiord (recalculated on the basis of the values determined above) cited by B.F. Friesen in a report to Inuit Tapirisat of Canada (1975). I shall use this 25 percent estimate in the absence of any other, but I should like to emphasize again the obvious need for further research into this important subject.

I also want to reiterate that this exercise of imputing a value to country food is strictly to determine the cost to the consumer of obtaining the closest possible substitute commodity. The substitution costs determined at this Inquiry

cannot represent the real value of country produce to native people because they do not derive the same satisfaction from these substitutes. Substitution costs do not take into account the many intangible qualities of country food, and they therefore underestimate its true value in a welfare sense.

It is evident from the foregoing discussion that new reporting systems and new techniques of analysis of the traditional economy are required, and I make recommendations on these in section two of this chapter. Yet even now, on the basis of the considerations of volume and value of production I have reviewed here, it is possible to reinterpret existing data to arrive at a more realistic estimate of the output of the traditional economy.

Output and Trends in the Traditional Economy

Several estimates of the output of the native economy, as well as observations on trends in it, were placed before this Inquiry. All of these estimates were based on only one or on a very few years' accumulation of data, and it is plain that such data may well be unrepresentative. Even if several years of data were available, the identification of trends is difficult when the availability, harvest and value of the resources fluctuate in complex fashion over time. The use of annual data from even a five-year period, such as that submitted by Gemini North, can lead to inferences about and the extrapolation of long-term trends that do not, in fact, exist. By and large, the data presented in evidence, although helpful, failed to provide an adequate basis for establishing trends.

Accordingly this section gives output data for a ten-year period, 1965-1975, and it will compare the annual averages of two five-year blocks, 1965-1970 and 1970-1975. The use of five-year averages should smooth out much of the cyclic, as well as isolated or sporadic, variations in animal abundance and short-term price fluctuations. These variations obscure changes in hunting and trapping effort so that smoothing them out should make long-term changes of effort more apparent. The comparison of two five-year blocks, the first of which precedes most of the recent industrial activity in the Mackenzie Valley and Western Arctic, may reveal some noteworthy trends. It would be desirable to examine a series of five-year averages for trends, but time has not permitted that.

To compare the two five-year periods, we have used unadjusted government data so that, although the totals are low, they provide a reasonable basis for comparison. Totals are given for only the major fur and game species (Table 2.1) on the grounds that changes in the harvests of these species are better indicators of changing effort than are the harvests of minor species. Indeed, the harvests of minor species often reflect the strategies and effort devoted to the major species.

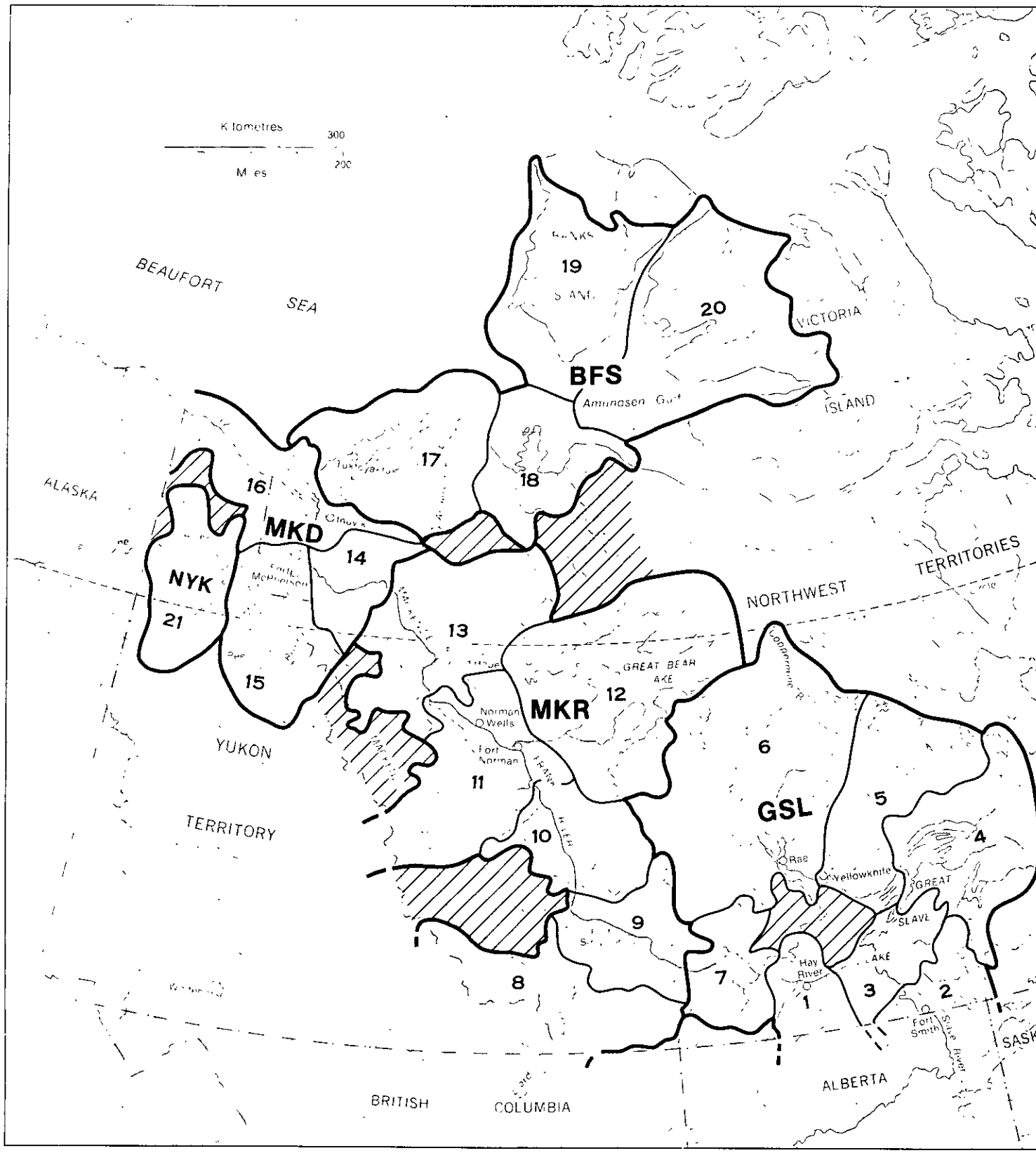
It has also been necessary to determine a means of allocating the data on a geographical basis. Harvests of fur, fish and game occur over broad areas and at myriad scattered points in the Mackenzie Valley and Western Arctic. For data collection purposes, however, they are reported at a much smaller number of points, generally the established settlements. The problem is to relate these reporting points to the collection areas in which the produce is harvested so that it is reasonably certain that almost all of the fur and game reported and recorded at locations in the area were in fact harvested within that collection area, and not in a neighbouring area.

Previous research has established the minimum level of data aggregation and the related harvest areas (chiefly Exhibit F656 for Inuit areas and a recent report by Usher on Dene harvesting). The boundaries of these minimum areas or harvest districts have been redrawn on the basis of additional information (Exhibits C31, F884 and Stager's Old Crow report). Although the Inquiry did not visit Snowdrift, that district has been included here in order to encompass all of the Dene communities in the Northwest Territories. In this chapter, all references to the harvest districts and regions of the Mackenzie Valley and Western Arctic, including Old Crow, refer to the areas delineated on the Map and detailed in the Legend. The 21 districts have been grouped into five regions, and all data are presented at the regional level.

The boundaries shown on the Map should be interpreted as rough delineations of core areas rather than as exact dividing lines between districts or regions, although they have remained more or less stable for at least the last 40 years. These harvest districts are not necessarily coincidental with past or present limits of native land use nor with the areas used by particular native social groupings. Nor are they necessarily the areas that any of these groups might identify or claim as their own. In some cases, there is significant movement across these boundaries for hunting and trapping or for other purposes, and some areas are shared by two or more groups. Native land use areas, so clearly understood by individual hunters and trappers, are only loosely defined in the aggregate, although in the lower Mackenzie and Arctic coast areas, Hunters and Trappers Associations have recently defined and registered their trapping areas in accordance with the Northwest Territories Game Ordinance.

Not all of the district boundaries are coincidental with the administrative boundaries of the territorial north. This is chiefly true of the Hay, Smith and Liard districts, which extend southward into the provinces. By the same token, some people from the northernmost communities of Alberta and Saskatchewan hunt and trap in the southern parts of the Northwest Territories. These cross-border harvests are in all cases small, and they do not significantly affect this statistical presentation.

Fur, Fish and Game Harvest Districts and Regions of the Mackenzie Valley and Western Arctic



LEGEND

Northwest Territories

Great Slave Lake Region (GSL)

1. Hay
2. Smith
3. Resolution
4. Snowdrift
5. Yellowknife
6. Rae
7. Providence

Mackenzie River Region (MKR)

8. Liard
9. Simpson
10. Wrigley
11. Norman
12. Bear Lake
13. Good Hope

Mackenzie Delta Region (MKD)

14. Arctic Red
15. McPherson
16. Delta

Beaufort Sea Region (BFS)

17. Tuktoyaktuk
18. Paulatuk
19. Banks
20. Holman

Yukon Territory

Northern Yukon Region (NYK)

21. Old Crow

Regional boundary
District boundary
//// Areas not harvested at present

These boundaries are in no way official

Abbreviations Used in Tables

BFS – Beaufort Sea Region
GSL – Great Slave Lake Region
MKD – Mackenzie Delta Region
MKR – Mackenzie River Region
NYK – Northern Yukon Region

na – not available

GNWT – Government of the Northwest Territories

JBNQNHRC – James Bay and Northern Quebec Native Harvesting Research Committee

TABLE 1.1
Some Population and Participation Estimates, Mackenzie Valley and Western Arctic[1]

Native male labour force[2]	3,000
General Hunting Licence holders[2]	2,225
Number trading furs, 1972-1973[3]	1,200
Number earning over $400 from furs, 1972-1973[3]	450
Number earning over $400 from furs, 1975-1976[4]	764

[1] Excluding Old Crow.
[2] Average per year, 1970-1975.
[3] Estimated from incomplete data.
[4] Data provided by GNWT, Fish and Wildlife Service.

TABLE 1.2
Economic Species of Wildlife in the Mackenzie Valley and Western Arctic

Furbearers

Muskrat (*Ondatra zibethicus*)
Beaver (*Castor canadensis*)
Otter (*Lontra canadensis*)
Ermine (*Mustela erminea*)
Mink (*Mustela vison*)
Marten (*Martes americana*)
Fisher (*Martes pennanti*)
Lynx (*Lynx lynx*)
Coloured fox (*Vulpes fulva*)
Arctic fox (*Alopex lagopus*)
Squirrel (*Spermophilus parryii* and *Tamiasciurus hudsonicus*)
Wolf (*Canis lupus*)
Coyote (*Canis latrans*)
Wolverine (*Gulo gulo*)

Big Game

Black bear and brown bear (*Ursus americanus* and *U. arctos*)
Polar bear (*Ursus maritimus*)
Moose (*Alces alces*)
Caribou (*Rangifer tarandus*)
Bison (*Bison bison*)
Dall's sheep (*Ovis dalli*)
Muskox (*Ovibos moschatus*)

Small Game

Snowshoe hare (*Lepus americanus*)
Arctic hare (*Lepus arcticus*)

Marine Mammals

Ringed seal and bearded seal (*Phoca hispida* and *Erignathus barbatus*)
White whale (*Delphinapterus leucas*)

Birds

Ducks (various species)
Geese (various species)
Ptarmigan (*Lagopus lagopus* and *L. mutus*)
Grouse (various species)

Fish

Fish (all species)

Scientific names for mammals according to Banfield (1977).
Scientific names for birds according to Godfrey (1966).

TABLE 1.3
Estimates of Error in Officially Recorded Fur Harvests[1]

SPECIES	MACKENZIE VALLEY AND ARCTIC COAST[2]	NORTHERN QUEBEC[3]
Muskrat	1.1	1.9
Beaver	1.2	1.5
Otter	? [4]	1.7
Ermine	? [4]	3.9
Mink	<1.1	1.8
Marten	<1.1	1.5
Fisher	1.1	– [5]
Lynx	1.5	3.4
Coloured fox	2.0	4.7
Arctic fox	1.1	
Squirrel	? [4]	9.5
Wolf	2.0	– [5]
Coyote	2.0	– [5]
Wolverine	4.0	– [5]

[1] Total estimated or observed catch as a proportion of the catch recorded in GNWT Fur Export Tax Returns.
[2] Rushforth (1975); Asch, personal communication June 3, 1977; Smith, personal communication June 3, 1977; Usher, field observations.
[3] Feit (1975).
[4] No basis available for making estimate.
[5] Not reported in Feit (1975).

TABLE 1.4
Percentages of General Hunting Licences Returned, Northwest Territories, 1968-1973[1]

SEASON	REGION				TOTAL
	GSL	MKR	MKD	BFS	
1968–1969	70	79	71	67	71
1969–1970	75	76	61	75	71
1970–1971	64	65	64	65	64
1972–1973	45	37	30	74	42
Average	64	64	57	70	62

[1] GNWT, Fish and Wildlife Service, General Hunting Licences issued and returned, 1968-1973.

TABLE 1.5

Comparison of Data on the Harvest of Big Game from Kill Statistics with Data from Interviews

TABLE 1.5A

Caribou: Fort Franklin (Bear Lake District)

YEAR	KILL STATISTICS	GENERAL HUNTING LICENCE REPORTING RATE (PERCENTAGE)	INTERVIEWS[1]
1970–1971	12	14	200
1971–1972	4	na	185
1972–1973	340	0	350
1973–1974	159	na	290
1974–1975	92	na	285
Average	121		262

TABLE 1.5B

Dall's Sheep: Richardson Mountains (McPherson and Delta Districts)

YEAR	KILL STATISTICS	GENERAL HUNTING LICENCE REPORTING RATE (PERCENTAGE)	INTERVIEWS[2]
1967–1968	4	na	25
1968–1969	59	72	16
1969–1970	25	61	30
1970–1971	33	67	39
1971–1972	22	na	40
1972–1973	30	31	62
Average	35		42

[1] Rushforth (1975).
[2] Simmons (1973).

TABLE 1.6
Some Comparative Observations on Bird Harvests

TABLE 1.6A
Fort Franklin (Bear Lake District), 1974-1975

TYPE	KILL STATISTICS	INTERVIEW[1]	
		TOTAL KILL	PER CAPITA KILL
Ducks	95	1,500-2,000	4.3
Ptarmigan	200	750-1,100	2.3
Grouse	87	250-350	0.7

TABLE 1.6B
Alaska, 1956-1957 (58 villages, with a native population of 10,694)[2]

TYPE	TOTAL KILL	PER CAPITA KILL
Ducks	39,400	3.7
Geese	17,160	1.6
Ptarmigan	50,435	4.7
Grouse	3,268	0.3

In some cases, observational data indicated that the actual harvests of migratory birds were about three times those reported in interviews with game officials.

TABLE 1.6C
Hay Lake, Alberta, 1966-1967 (native population of 175; 30 regular hunters)[3]

YEAR	TOTAL DUCKS AND GEESE	PER CAPITA KILL
1966	8,600	48.0
1967	2,010	11.5

TABLE 1.6D
Northern Quebec Cree Communities, 1974-1975 (seven villages with a native population of 6,059)[4]

TYPE	TOTAL KILL	PER CAPITA KILL
Ducks	53,808	8.9
Geese	81,070	13.4
Ptarmigan	51,325	8.5
Grouse	16,542	2.7

TABLE 1.6E

Northern Quebec Inuit Communities, 1974-1975 (12 villages with a native population of 3,629; 807 males 18 and over; 646 potential hunters)[5]

TYPE	TOTAL KILL	PER CAPITA KILL
Ducks	14,870	4.1
Geese	31,225	8.6
Ptarmigan and Grouse	83,035	22.9

[1] Rushforth (1975).
[2] Hansen (1957).
[3] Macauley and Boag (1974).
[4] James Bay and Northern Quebec Native Harvesting Research Committee (JBNQNHRC) (1976), Part I.
[5] JBNQNHRC (1976), Part II.

TABLE 1.7

Comparison of Numbers of Sealskins Traded with Numbers of Seals Harvested: Holman

YEAR	SKINS TRADED[1]	SEALS HARVESTED[2]
1962-1963	1,726	2,250+
1963-1964	3,479	4,250
1964-1965	3,712	na
1970-1971	na	5,445+ (calendar year 1971)
1971-1972	1,096	
1972-1973	2,198	8,000 (calendar year 1973)
1973-1974	3,213	
1974-1975	2,876	na

[1] GNWT Fur Export Tax Returns.
[2] Usher (1965) for the 1960s; Smith (F18511ff.) for the 1970s.

TABLE 1.8

Estimates of Error in Officially Recorded Big Game and Bird Harvests[1]

SPECIES	ERROR ESTIMATE
Black bear and brown bear	1.3
Polar bear	1.0
Moose	1.3
Caribou	1.5
Bison	1.0
Dall's sheep	1.2
Ducks (various species)	3.0
Geese (various species)	3.0
Ptarmigan	5.0
Grouse	2.5

[1] Total catch as a proportion of catch recorded in GNWT Kill Statistics.

TABLE 1.9
Average Edible Weight (in pounds) Per Animal[1]

SPECIES	REGION				
	GSL	MKR	MKD	BFS	NYK
Muskrat	1.4	1.4	1.4	1.4	1.4
Beaver	17.4	17.4	17.4	–	17.4
Otter	10.5	10.5	–	–	–
Lynx	8.5	8.5	8.5	–	8.5
Black Bear[2]	210.0	210.0	210.0	–	210.0
Polar Bear[3]	–	–	–	175.0	–
Moose	438.0	438.0	438.0	–	438.0
Caribou[4]	112.0	120.0	120.0	90.0	120.0
Bison[5]	550.0	–	–	–	–
Dall's sheep[6]	–	75.0	75.0	–	–
Muskox[7]	–	–	–	300.0	–
Ducks[8]	1.7	1.7	1.7	2.5	1.7
Geese[9]	3.5	3.5	3.5	3.5	3.5
Ptarmigan	0.8	0.8	0.8	0.8	0.8
Grouse	0.7	0.7	–	–	–
Snowshoe hare	1.9	1.9	1.9	–	1.9
Arctic hare[10]	–	–	5.0	5.0	–
White whale[11]	–	–	232.0	232.0	–
Seals[12]	–	–	30.0	30.0	–

[1] According to JBNQNHRC (1976), unless otherwise noted.

[2] Includes a small proportion of brown bears; they are assumed to yield the same edible weight.

[3] The JBNQNHRC figure of 350 pounds is considered too high for the Beaufort Sea area, where many of the bears taken are from the younger age classes. Stirling (personal communication, June 7, 1977) suggests 150-200 pounds edible weight per animal is more reasonable, and therefore a median figure of 175 pounds is used here. This accords more closely with an earlier estimate, based on a small sample, of 250 pounds (Usher, 1971).

[4] Weighted averages are used that take account average weights for different herds and the proportion that each herd contributes to the regional harvest. Table 1.9.1 below indicates the basis for this weighting. The weight estimates are derived from Foote (1965), Kelsall (1968) and Usher (1971).

[5] Derived from dressed weights by age and sex class provided by Novakowski (1965). The harvest is assumed to consist chiefly of young adults (2.5 to 4.5 years), equally divided between males and females, on the basis of advice from Novakowski (personal communication, June 8, 1977). This gives an average of 513 pounds, which has been increased to 550 pounds to take account the use of the head and organs.

[6] Very few data are available. Those provided by Geist for older rams suggest live weights of nearly 200 pounds. Banfield (1977) estimates adult female weight at 125 pounds. As the native harvest includes a large proportion of females and juveniles (Simmons, 1973), the average edible yield per animal is estimated to be 75 pounds.

[7] Very few data are available. Application of the same general reasoning as for Dall's sheep (above) to the weights provided by Tener (1965) gives an estimated average of 300 pounds edible yield.

[8] The average edible weight for eider ducks (Usher, 1971) is used for the Beaufort Sea harvest.

[9] The average weight of snow geese is used here because this species makes up the bulk of the goose harvest in all regions.

[10] Estimate derived from Usher (1971).

Table 1.9, footnotes (continued)

[11] Estimate derived from Brackel (1977). In addition, Brackel estimates that each whale yields 30 gallons of muktuk and 20 gallons of edible oil. Estimating a specific gravity of 1.00 for muktuk, and using Bailey's (1952) figure of about 0.93 for whale oil, this converts to 300 pounds muktuk and 186 pounds oil.

[12] Application of McLaren's (1958) component weight percentages to Usher's data on live weight for ringed seals (1971) results in an estimate of 26 pounds edible weight for humans. This may be conservative, for the JBNQNHRC figure is 31.5 pounds. (There is, on average, another 7.5 pounds of blubber per ringed seal available for dog feed or for rendering into edible oil.) Taking into account the small proportion of the catch that consists of the larger, bearded seal, and applying Usher's catch and weight data for Banks Island (1971), the average seal, regardless of species, yields 30 pounds edible weight of food plus 8.6 pounds blubber.

TABLE 1.9.1

Weighted Determination of Average Edible Weights of Caribou

SUBSPECIES (*Rangifer tarandus*)	AVERAGE EDIBLE WEIGHT (POUNDS)	PROPORTION BY REGION (PERCENTAGE)[1]				
		GSL	MKR	MKD	BFS	NYK
caribou	170	10	25			
groenlandicus	105	90	75		35	
granti	120			100		100
pearyi	80				65	
		WEIGHTED AVERAGE BY REGION (POUNDS)				
CARIBOU		112	120	120	90	120

[1] Estimate based on probable location of harvests by district, 1970-1975.

TABLE 1.10

Gross Imputed Values of Country Foods

TYPE OF FOOD	SUBSTITUTE	AVERAGE PRICE/POUND[1]	CORRECTION FACTOR FOR PROTEIN	IMPUTED VALUE/POUND BY REGION	
				MKR, MKD, BFS, NYK	GSL
		$		$	
Big game and hare	Beef	2.50	1.6	4.00	3.40
Edible furbearers[2]	Pork	2.50	1.2	3.00	2.55
Marine mammals	Beef	2.50	1.8	4.50	–
Birds	Chicken	1.50	1.3	1.95	1.65
Fish	Fish	2.00	1.0	2.00	1.70

[1] No adjustment made for bone content because there are no uniform measurements of edible yields of comparative wild meats.

[2] The leading edible furbearers – beaver and muskrat – have fattier meats; they are, therefore, more comparable to pork than to beef.

TABLE 2.1

Comparison of Average Annual Harvests of Major Fur and Game Species, by Region, 1965-1970 and 1970-1975[1]

REGION		MUSKRAT	BEAVER	MINK	MARTEN	LYNX	ARCTIC FOX	MOOSE	CARIBOU
GSL	1965–1970	56,709	3,471	3,106	2,073	1,226	222	464	4,497
	1970–1975	32,675	2,956	1,462	1,856	1,183	266	323	4,443
MKR	1965–1970	6,363	3,952	833	6,226	560	6	535	683
	1970–1975	2,817	2,453	439	4,104	1,234	17	284	660
MKD	1965–1970	138,577	1,034	963	928	619	570	75	1,376
	1970–1975	64,406	179	1,031	956	553	912	46	1,480
BFS	1965–1970	184	–	10	263	–	5,049	–	571
	1970–1975	1,480	–	17	211	–	9,019	–	1,152
Total NWT	1965–1970	201,833	8,457	4,912	9,460	2,405	5,847	1,074	7,127
	1970–1975	101,378	5,588	2,949	7,127	2,970	10,214	653	7,735
NYK	1965–1970	8,900	43	13	63	9	–	20	554
	1970–1975	11,852	29	31	61	22	–	19	516
Total all regions	1965–1970	210,733	8,500	4,925	9,553	2,414	5,847	1,094	7,681
	1970–1975	113,230	5,617	2,980	7,188	2,992	10,214	672	8,251

[1] NWT: GNWT, Fish and Wildlife Service, Fur Export Tax Summaries; Kill Statistics derived from General Hunting Licence Returns. Yukon: Stager (1974); information provided by Yukon Game Branch.

TABLE 2.2
Comparison of Value of Average Annual Harvests of Major Furbearers, by Region, 1965-1970 and 1970-1975[1]

		MUSKRAT	BEAVER	MINK	MARTEN	LYNX	ARCTIC FOX	TOTAL
		$	$	$	$	$	$	$
Average price	1965-1970	0.93	12.32	16.67	10.87	23.81	13.45	
	1970-1975	1.76	14.58	18.66	14.94	51.11	17.97	
Region								
GSL	1965-1970	52,739	42,763	51,777	22,534	29,191	2,986	201,990
	1970-1975	57,508	43,098	27,281	27,729	60,463	4,780	220,859
MKR	1965-1970	5,918	48,689	13,886	67,677	13,334	81	149,585
	1970-1975	4,958	35,765	8,192	61,314	63,070	305	173,604
MKD	1965-1970	128,877	12,739	16,053	10,087	14,738	7,667	190,161
	1970-1975	113,355	2,610	19,238	14,283	28,264	16,389	194,139
BFS	1965-1970	171	–	167	2,859	–	68,044	71,241
	1970-1975	2,605	–	317	3,152	–	162,071	168,145
Total NWT	1965-1970	187,705	104,191	81,883	103,157	57,263	78,778	612,977
	1970-1975	178,426	81,473	55,028	106,478	151,797	183,545	756,747
NYK	1965-1970	8,277	530	217	685	214	–	9,923
	1970-1975	20,860	423	578	911	1,124	–	23,896
Total all regions	1965-1970	195,982	104,721	82,100	103,842	57,477	78,778	622,900
	1970-1975	199,286	81,896	55,606	107,389	152,921	183,545	780,643

[1] Table 2.1; Statistics Canada, *Fur Production* (23-207 annual) 1967-1976.

TABLE 2.3
Average Annual Volume and Value of Fur Harvest, 1970-1975, Adjusted

SPECIES	FUR EXPORT TAX RETURNS TOTAL	CORRECTION FACTOR[1]	ADJUSTED TOTAL	VALUE PER PELT[2]	TOTAL VALUE
				$	$
Muskrat	113,230	1.1	124,553	1.76	219,213
Beaver	5,617	1.2	6,740	14.58	98,269
Otter	78	?	78	25.74	2,008
Ermine	2,181	?	2,181	.73	1,592
Mink	2,980	<1.1	3,200	18.66	59,712
Marten	7,188	<1.1	7,800	14.94	116,532
Fisher	27	1.1	30	23.28	698
Lynx	2,992	1.5	4,488	51.11	229,382
Coloured Fox	784	2.0	1,568	26.04[3]	40,831
Arctic Fox	10,214	1.1	11,235	17.97[4]	201,893
Squirrel (various species)	7,937	?	7,937	.52	4,127
Wolf	249	2.0	498	52.10	25,946
Coyote	42	2.0	84	19.43	1,632
Wolverine	58	4.0	232	64.16	14,885
Black bear and brown bear[5]	271	1.3	352	31.10	10,947
Polar bear	57	1.0	57	575.08	32,780
Ringed seal[6]	2,166	1.5	3,249	13.75	44,674
Total					1,105,121
Add 10 percent for undervaluation					110,512
Adjusted total value					1,215,633
Unadjusted total value[2]					897,915
Percent difference					35%

[1] From Tables 1.3, 1.8.
[2] Statistics Canada, *Fur Production* (23-207 annual) 1972-1976.
[3] Average for red fox.
[4] Average for white fox.
[5] Correction factor based on General Hunting Licence Returns under-reporting.
[6] Correction factor based on apparent non-reporting in Fur Export Tax Returns (*See*, for example, Smith and Taylor, [1977:4]).

TABLE 2.4
Average Annual Production of Food Animals by Region, 1970-1975, Adjusted

SPECIES	CORRECTION FACTOR[1]	REGION					TOTAL
		GSL	MKR	MKD	BFS	NYK	
Moose	1.3	420	369	60	–	25	874
Caribou	1.5	6,665	990	2,220	1,728	774	12,377
Black bear and brown bear	1.3	173	153	23	–	3	352
Polar bear	1.0	–	–	–	57	–	57
Bison	1.0	85	–	–	–	–	85
Dall's sheep	1.2	–	8	23	–	–	31
Muskox	1.0	–	–	–	30	–	30
Muskrat	1.1	35,942	3,099	70,847	1,628	13,037	124,553
Beaver	1.2	3,547	2,943	215	–	35	6,740
Lynx	1.5	1,775	1,851	829	–	33	4,488
Otter	1.0	71	6	–	–	1	78
Ducks	3.0	23,157	5,781	7,059	7,128	150	43,125
Geese	3.0	1,299	978	2,580	7,608	18	12,483
Ptarmigan	5.0	28,690	5,760	4,135	20,875	220	59,680
Grouse	2.5	11,600	3,288	–	–	–	14,888
Whales	1.0	–	–	70	50	–	120
Seals[2]	– [3]	–	–	250	6,000	–	6,250

[1] From Tables 1.3, 1.8.
[2] Estimated total harvest.
[3] Not calculated.

TABLE 2.5
Average Annual Weight (in pounds) of Food Produced, by Species and Region, 1970-1975, Adjusted

SPECIES	REGION					TOTAL
	GSL	MKR	MKD	BFS	NYK	
Moose	183,960	161,622	26,280	–	10,950	382,812
Caribou	746,480	118,800	266,400	155,520	92,880	1,380,080
Black bear and brown bear	36,330	32,130	4,830	–	630	73,920
Polar bear	–	–	–	9,975	–	9,975
Bison	46,750	–	–	–	–	46,750
Dall's sheep	–	600	1,725	–	–	2,325
Muskrat	50,319	4,339	99,186	2,279	18,252	174,375
Beaver	61,718	51,208	3,741	–	609	117,276
Lynx	15,088	15,734	7,047	–	281	38,150
Otter	746	63	–	–	10	819
Ducks	39,367	9,828	12,000	17,820	255	79,270
Geese	4,547	3,423	9,030	26,628	63	43,691
Ptarmigan	22,952	4,608	3,308	16,700	176	47,744
Grouse	8,120	2,302	–	–	–	10,422
Whales	–	–	16,240	11,600	–	27,840[1]
Seals	–	–	7,500	180,000	–	187,500[2]
Fish[3]	897,750	307,160	690,371	188,960	35,000	2,119,241
Hare[4]	50,000	27,650	33,600	10,000	7,000	128,250
Total	2,164,127	739,467	1,181,858	619,782	166,106	4,870,440

[1] Does not include 22,320 pounds edible oil and 36,000 pounds muktuk.
[2] Does not include approximately 40,000 pounds edible oil.
[3] Estimates based on literature sources.
[4] Estimates based on five percent of human food from all other sources, except as indicated in the text.

TABLE 2.6
Comparison of Estimates of Total Food Harvest by Weight (in pounds)

TYPE	GNWT RECORDS[1]	OWN ESTIMATES
Big game	1,338,937	1,895,862
Edible furbearers	282,510	330,620
Marine mammals[2]	92,820	215,340
Birds	54,735	181,127
Subtotal	1,769,002	2,622,949
Unrecorded by GNWT		2,247,491
Total	1,769,002	4,870,440

[1] GNWT, Fish and Wildlife Service, Fur Export Tax Returns summaries; Kill statistics derived from General Hunting Licence Returns.
[2] Not including edible oil and muktuk.

TABLE 2.7
Total and Human[1] Food Production by Type and Region (in pounds)

TYPE OF FOOD		REGION					TOTAL
		GSL	MKR	MKD	BFS	NYK	
Big game	total	1,013,520	313,152	299,235	165,495	104,460	1,895,862
	human	1,000,000	300,000	290,000	160,000	100,000	1,850,000
Furbearers	total	127,871	71,344	109,974	2,279	19,152	330,620
	human	100,000	60,000	50,000	1,000	15,000	226,000
Birds	total	74,986	20,161	24,338	61,148	494	181,127
	human	70,000	18,000	22,000	58,000	0	168,000
Marine mammals[2]	total	–	–	23,740	191,600	–	215,340
	human	–	–	10,000	50,000	–	60,000
Fish	total	897,750	307,160	690,371	188,960	35,000	2,119,241
	human	300,000	175,000	300,000	80,000	25,000	880,000
Hare	total	50,000	27,650	33,600	10,000	7,000	128,250
	human	50,000	27,000	33,000	10,000	7,000	127,000
All food	total	2,164,127	739,467	1,181,858	619,782	166,106	4,870,440
	human	1,520,000	580,000	705,000	359,000	147,000	3,311,000

[1] Human food estimated to nearest 1,000 pounds.
[2] Does not include edible oil and muktuk.

TABLE 2.8
Value of Human Food Production

TYPE	WEIGHT (POUNDS)	VALUE/POUND[1]		TOTAL VALUE
		$	$	$
Big game, hare	1,977,000	4.00	(3.40)	7,278,000
Edible furbearers	226,000	3.00	(2.55)	633,000
Marine mammals:				
meat	60,000	4.50	–	270,000
edible oil and muktuk	78,000	–[2]	–	25,000
Birds	168,000	1.95	(1.65)	306,600
Fish	880,000	2.00	(1.70)	1,650,000
Total	3,359,000			10,162,600

[1] Figure in brackets is GSL regional value.
[2] Local exchange values used due to lack of appropriate substitutes. Brackel (1977) quotes these as $1.50 per gallon of oil and $5.00 per gallon of muktuk.

TABLE 2.9
Average Annual Gross and Net Imputed Values of Primary Harvest in the Native Economy, Mackenzie Valley and Western Arctic, 1970-1975

ITEM	VALUE
	$
Human food	10,200,000
Dog food	1,000,000
Furs[1]	1,200,000
Other	1,240,000
Total, gross	13,640,000
Total, net (approximate)	10,200,000

[1] Cash value.

Trends

The harvest of moose and caribou meat appears to have declined by about 10 percent by weight, although the decline in moose kills is much greater than the increase in caribou kills. However, in view of the apparent decline of hunters reporting their kills during the second of the five-year periods, we must estimate that there has been no significant change in the meat harvest.

Changes in the fur harvest are much more pronounced, and they appear to be significant even if it is assumed that non-reporting of furs is on the increase. There was a severe decline in muskrat and beaver harvests, and almost as great a drop in the fine fur (mink and marten) harvests. Long-haired fur (lynx and fox) catches both rose, although, in view of the very long population cycle of lynx, and of the unusual succession of good years on Banks Island (where most arctic fox in the Mackenzie Valley and Western Arctic are taken), this rise is not necessarily the result of increased trapping effort. Overall, there appears to have been a significant decline in trapping effort, although higher prices for all furs resulted in an increase of about 25 percent in trapping revenue from the major species. Table 2.2, which shows the comparative values of fur harvest, should be interpreted cautiously because the total values are the product of average price and average harvest. Preliminary assessment suggests that this procedure has biased the value of the lynx harvest upwards and of the fox harvest downwards, but that it has had negligible effect on the other species. Returns for 1975-1976 indicate unusually high harvests of some species especially in the southern Mackenzie District, but we do not yet understand the cause or the significance of this change.

I am fully aware that all of these observations are based on a very crude examination of the data. A proper determination of trends must be based on a rigorous analysis of a longer series of data and it must include statistically sound procedures for isolating significant variables.

Output

I shall now attempt to establish the total output of the native economy by adjusting official data according to the factors of error identified in the preceding section. Annual averages are calculated for the five-year period 1970-1975.

FUR

Applying the foregoing correction factors to the fur harvest, we see in Table 2.3 that official statistics underestimate their total value by about 35 percent. One caution in using this table: to the degree that the adjusted value accounts for domestic retention of furs, it includes an imputed value as well as a cash income. The imputed value of furs in this case, however, is not its substitute value, it is the producer's value or opportunity cost. Accordingly, this procedure is appropriate for both market and welfare evaluations of fur production. In any larger analysis of the native economy, the value of furs retained for garments or for handicrafts should be subtracted from the gross value of these final outputs. Minor considerations not accounted for in the table include the sale of muskox hides, which possibly amount to about $10,000 annually, bounty payments for wolves, and the small number of furs taken in the Yukon by trappers from Fort McPherson and the Mackenzie Delta. There do not appear to be any continuous records of furs or caribou taken by these trappers in the Yukon.

FOOD

Table 2.4 shows the adjusted harvest totals for each species, and Table 2.5 shows the weight of edible yield of this harvest. As outlined in section one of this chapter, hare harvests have been estimated at five percent of the total of all other human food production from the land, except for the Great Slave Lake and Beaufort Sea regions, for which best estimates have been made. Table 2.6 indicates that official records seem to underestimate the weight yield of the recorded species by about one-third and further, that these recorded species account for little more than one-half of all native food production.

Table 2.7 attempts to show the probable proportion of gross food production that is actually consumed by humans. This estimate is based on sources in the literature, but the data are so sporadic that some extrapolation has been necessary. I have tried to err on the side of caution and to underestimate the proportion that humans actually use. Of the total production of meat and fish, about two-thirds is used as human food and one-third as dog food, an estimate that takes into account the very great decline in the dog population throughout the Mackenzie Valley and Western Arctic during the 1970s. The amount of food production that is not used at all is thought to be very small and seems to be restricted chiefly to marine mammals and edible furbearers.

The value of human food production is estimated in Table 2.8. The total consumption of about 3.36 million pounds is valued at nearly $10.2 million. Assuming a native population of 14,000, the annual per capita consumption of meat is 240 pounds, which would have a replacement value of $726. The figure of 240 pounds is slightly higher than the figures earlier estimated by Asch (Exhibit F605) and Usher (Exhibit F676) for the Central Mackenzie and the Western Arctic respectively. Surveys conducted in 1974-1975 by the James Bay and Northern Quebec Native Harvesting Research Committee (1976) reveal much higher per capita harvests in northern Quebec: 327 pounds by the Cree Indians and 1,026 pounds by the Inuit. The figure for the Inuit is augmented by substantial harvests of marine mammals (40 percent by weight), not all of which may be consumed. Nonetheless, these figures, based on comprehensive research in northern Quebec, suggest that my estimates for the Northwest Territories are conservative.

The proportion used for dog food, valued conservatively at

$.50 per pound on a replacement basis, would be worth about $750,000. The use of inedible viscera and other waste products for dogs might bring the total value of dog food in kind to about $1 million.

TOTAL PRIMARY HARVEST

Finally, some account must be taken of domestic produce other than food or furs, such as caribou hides used for bedding, moose hides used for clothing and, in particular, wood used for fuel and construction. There is little quantitative information of these uses, and the total imputed value of these products might be in the order of 10 percent of all other production values. By far the greatest proportion of this amount, estimated at nearly $1.25 million, is accounted for by fuel wood, which, in heating value equivalent to fuel oil, is worth about $100 per cord.

Table 2.9 summarizes the values of all types of country produce. Deducting estimated production costs, we obtain a rough estimate of the average annual net value during 1970-1975 of the primary harvest in the Mackenzie Valley and Western Arctic of over $10 million. Now this is quite evidently not a definitive evaluation of the output of the native economy. Rather, the purpose here has been to outline the methods and considerations that would enter that evaluation and to demonstrate how far we are at present from being able to make that evaluation. Until there are improved reporting systems and firmer conversion factors, I think this is the best estimate that can be made.

Yet whatever modifications may result from more thorough documentation and analysis of the traditional economy, some conclusions may already be drawn. The level of participation in the traditional economy, and the volume and value of production from that economy, are considerably greater than estimates upon which government policy relating to resource development in the North has hitherto been based.

Comparison with Other Economic Sectors

The estimates offered above are valid only in considering the contribution of the primary harvest in the native sector to the economic welfare of native people. Adjusting the Gemini North data for the region defined here, native income from all sources in 1972 and 1973 was at most $12 million. Gemini North's estimates for native income (again regionally adjusted), however, suggest a gross income of just over $1.5 million from traditional pursuits, or little more than 10 percent of the total presented in Table 2.9. By a welfare measure (and I use this term as economists do: an indication of personal or social well-being rather than in the popular sense of a subsidy), native income in the region would in fact have been about $20 million, of which roughly half came from primary production. Whatever may be the need for more jobs and more cash, it must be made quite clear that in economic terms alone the renewable resources make a vital contribution to native well-being throughout the region.

It would not be valid, however, to use these estimates in direct comparison with the output of, for example, the mining sector. The market value of primary production in the native sector would be considerably lower than its welfare value, but for the reasons outlined at the end of section one of this chapter, I do not believe it is either practically possible or theoretically valid to attempt any direct comparison of the market values of output in the native and non-native sectors.

Recommendations for Data Collection

It is evident from the foregoing discussion that conventional measurements of the output of the traditional economy may produce estimates that are in error not just by a few percentage points, but by factors of up to ten. In no other sector of the Canadian economy would such a situation be allowed to occur, much less persist — but that reflects the cultural bias of southern Canadians. Few native people would think of measuring their economic production, much less devise elaborate methods for doing so. They are well aware of the value to them of the land and its resources, and the need to measure the output of the native economy exists only because of external encroachments on that economy. Yet, if the need for such measurement is external, the ability to meet it is internal. The systems of data collection in use at present do not meet the purpose of measuring or evaluating output, they do not work well, and they will probably work even less well in future. Output can be accurately totalled only on the basis of individual reporting by hunters and trappers, supplemented by regular surveys and observations. But this form of reporting will never work unless native people find that it is in their own interest to undertake these efforts.

4. *Reporting systems used in other jurisdictions, for example, those recently developed in Northern Quebec, should be examined, particularly those that rely on voluntary reporting by hunters themselves.*

The problem of measuring the performance of the traditional economy will be closely associated with both the future control and direction of game management and the settlement of native claims, especially if the settlement contains provisions or guarantees for the maintenance of the traditional economy.

5. *Because future reporting systems, if they are to be effective, will require the approval and, indeed, the active support of hunters and trappers, both the institutional and technical problems inherent in such systems should be examined without delay.*

The institutional questions are certainly political, and the initiatives must come from native people's own organizations.

I am aware that neither the federal nor the territorial game management agencies are ignorant of the deficiencies in data

collection that I have discussed, and that they are now taking steps to improve harvest reporting. I would emphasize, however, that harvest surveys and related research to measure native resource use have objectives and implications that go well beyond game management or economic development. What is being measured is the use of a resource that native people consider their own by law, right and tradition, and it is, therefore, intimately related to the settlement of native claims.

6. *All aspects of harvest research, including technical aspects, must be devised in full consultation with, and implemented with the full agreement and cooperation of both the native people's organizations that are concerned specifically with game, and their political organizations.*

Harvest surveys or any other means of measuring the traditional economy will surely founder and produce questionable results if those most concerned have reason to question the motives or objectives behind such research.

In order for native people to find it in their own interest to report their harvests accurately, several conditions must be satisfied, among them the following.

7. *Native people must be involved in the direct management and control of the reporting system, through whatever bodies they designate or establish for that purpose. Technical expertise should be made available to such bodies as required.*

8. *Harvesters must be assured of anonymity in reporting. Accordingly, the reporting system must be entirely independent of regulatory and enforcement agencies, such as the Fish and Wildlife Service and the RCMP, in the same way that information collected from individuals for national censuses is neither collected by nor available to the Department of National Revenue. Aggregated data must of course be available to all government agencies and to the public.*

9. *Native people must be assured of their continued right and ability to harvest their traditional resources.*

This assurance will presumably require the enshrinement of native hunting rights, guarantees of control over access to the resources, and possibly guaranteed harvest levels. These guarantees, of course, are all matters for claims negotiations between native people and the Government of Canada. We can be sure, however, that if there is any suggestion that full disclosure of harvests will in any way threaten existing use and enjoyment of traditional resources, or lead to restrictive or punitive action on the part of government authorities, a voluntary reporting system will never work. On the other hand, a satisfactory settlement of native claims, as well as appropriate guarantees of compensation, should ensure that the interests of hunters and trappers would not be served by deliberately overreporting their harvests.

10. *Standard definitions, measurements, conversion factors and methodologies must also be devised. Significant progress in native harvesting research has been made in other jurisdictions, and the experience there should be brought to bear here. There is also much expertise in both federal and territorial government agencies to assist in the solution of technical problems. Research needs should be identified as soon as possible and cooperative arrangements should be made between native organizations and the appropriate governments to undertake the necessary research. The technical groundwork can be accomplished before any new reporting systems are established.*

Potential for Renewable Resource Development

An assessment of potential economic development in the North must begin with an examination of the endowment of natural resources. For the purposes of this volume, when I speak of the renewable resources of the North, I mean specifically the natural resources that native people have traditionally used, as well as resources they can develop largely under local initiative, management and control. The two categories together include the full range of fur, fish and game resources, timber resources for selected purposes, the environment itself as a recreational and aesthetic resource, and agriculture. They do not include the development of water resources for hydro-electric power or the large-scale processing of wood for pulp and paper. I am not suggesting that the native people would not, under some circumstances, wish to take some part in such ventures (for example, as rentiers), but only that the people who addressed the Inquiry clearly indicated that direct participation in such economic developments would be incompatible with their style of life and their aspirations. However, as I pointed out in Volume One, the sort of development we are discussing here could extend beyond renewable resources to include certain small-scale, non-renewable resource developments, such as gravel pits and quarries.

The resource itself is of prime importance in determining whether or not the native people would wish to include an activity based on it in their economy. The scale of technology and organization that exploitation of the resource would demand is also an important factor. For native people, the scale of organization should not exceed the framework within which they make decisions in their communities. The community must always be able to control the venture and determine its development. The venture should not be of a kind or scale that would enable it to dominate the community.

There are two main aspects to the development of renewable resources: the first is to increase harvest levels and the second is to improve the marketing, processing and service activities that are based on these resources. Unfortunately there are no adequate or comprehensive assessments of the potential of renewable resources in the Mackenzie Valley and

Western Arctic. I can only suggest here, on the basis of limited evidence from biological research, historical harvest statistics, and previous northern experience what are likely to be the most promising directions for more detailed assessments.

Increasing Harvest Levels

FUR

Both Dr. Nick Novakowski and Robert Ruttan suggested in evidence that many furbearing species in the Mackenzie Valley are underharvested, a view that is widely expressed within the region as well. It appears to be a reasonable inference, if not a well substantiated fact, for we have virtually no quantitative data on the actual populations or sustainable yields of any of the northern furbearers.

Of the major furbearers, muskrat seems to offer the greatest promise for increased harvests. Annual returns of over 500,000 pelts, of which a much larger proportion than at present consisted of the more valuable trapped (rather than shot) muskrats, were frequent in the 1940s and 1950s. There do not appear to be any biological impediments to realizing such harvests again. Beaver and marten harvests have been double their present levels for extended periods in the past, although both species have been overtrapped in the past as well, which has led to highly restrictive quotas or closed seasons. Yet in some areas the potential for greater harvests of these species appears to exist, and beaver yields can be improved through management techniques. Lynx populations are extremely cyclic, and they appear to be vulnerable to overharvesting at their low points. The feasibility of increased harvesting is unknown, although lynx may be underharvested in some areas. Coloured fox harvests are at present only a small fraction of what they were many years ago, and there appears to be great scope for increasing their catch. Squirrels and ermine are thought to be underharvested, although their values per pelt are low. The remaining terrestrial furbearers do not appear to offer any significant potential for improved harvest.

No increase is foreseen for polar bears, and the seal situation is uncertain. Possible increases in muskox quotas will make more of their hides available for sale.

Ruttan and John T'Seleie, in their evidence, estimated that the overall fur harvest at Fort Good Hope could be increased threefold. Taking the Mackenzie Valley and Western Arctic as a whole, I believe that a doubling of the present output, assuming constant prices, is probably possible. Much of this potential can be realized only by harvesting areas that are at present unused, although improved game management practices will be important for some species. The cost per pelt retrieved will therefore be higher, given present trapping arrangements.

Fur farming provides additional possibilities of raising production. In the Soviet Union, the world's leading producer of arctic fox, feeding stations on the tundra and summer feeding of young foxes in captivity have raised pelt yields. In the 1950s, a mink farm was operated in the Mackenzie Delta under private ownership, but it failed because of the lack of feed. This problem should no longer be an impediment to successful mink ranching because the decline in the dog population has made available large amounts of food that are unsuitable for human consumption and much of which is at present wasted.

FOOD

Fish and wildlife are essential sources of protein in the North and, with improved management and development, they could supply both a growing population there and a limited export market. The most beneficial use to man of vast areas of land and water in northern Canada is for the production of protein. The regional potential for improving food harvests cannot readily be estimated, partly because many of the major food species found there are migratory and are, therefore, shared with users outside the region. The problem of game management is therefore also complex. A useful discussion of the economic potential of a number of the major food resources, based on research sponsored by Inuit Tapirisat of Canada, is contained in a recent report by B.F. Friesen (1975) and in another by Friesen and J.G. Nelson (1975). They do not, however, deal with the major freshwater fisheries in the Mackenzie Valley nor with terrestrial species common only in the southern Mackenzie District.

There are marked differences of opinion on the ability of the caribou herds in the region to withstand significantly greater hunting pressures, especially in view of increasing encroachment on caribou range by various developments in the northern parts of the provinces as well as in the territories. Nevertheless, improved management and harvesting practices should permit greater yields in at least some areas. The reindeer herd, despite its checkered history, continues to provide food and employment in the Mackenzie Delta region, although its full potential has never been realized. Moose and muskox harvests could be increased in certain areas. Experiments in other parts of the North indicate that muskoxen can be raised domestically to provide milk and wool as well as meat. Recent reports by G.W. Scotter (1970) and Scotter and E.S. Telfer of the Canadian Wildlife Service (1975) assess these possibilities in more detail. Other big game species do not appear capable of sustaining much larger harvests than at present. The potential for increased bird harvests is not known. Increased beaver and muskrat yields would, of course, result in additions to the food supply.

The best prospect for increased food production in the North is almost certainly fish. The annual potential fish yield in the North has been estimated at 20 million pounds, of which only about 7 million pounds are harvested at present. This harvest includes commercial fisheries, which have not been mentioned in the previous discussion of domestic food production. The decline in the dog population appears to have

led to a marked reduction in the domestic fishery, and this slack could be taken up by harvesting fish for other purposes. At the same time, there may be as yet untouched fish populations, chiefly in marine waters, which could be harvested to advantage. The possibility of significantly increased yields through management techniques or aquaculture appears to be more promising with the fish resources of the North than with any other food source.

Quite apart from whether or not the kill of marine mammals can or should be increased, a reduction in the loss rate by sinking of all species through improved harvest techniques would yield a great increase in the food supply. The decline in the dog population has released large quantities of marine mammal protein, as well as of fish, for other uses, and no advantage has been taken of its availability to date. There are available also large unused, but potentially valuable, quantities of marine oils.

OTHER RESOURCES

The forest resources of the Mackenzie Valley are, by and large, at present underused. Most of the harvestable stands are located south of South Nahanni River. North of Fort Simpson, the available timber is concentrated in narrow stands on alluvial soil in river valleys. However, whether or not the more northern stands can provide a sustained yield is questionable because of the very long time — up to 200 years — that an average tree takes to reach maturity and because of the uncertain quality of timber. A method for successfully reforesting cut-over areas in much of the North has not yet been developed. In the Mackenzie Delta, there is evidence that once a wooded area has been cleared, tundra takes it over. In many ways, then, the northernmost parts of the forest can be functionally non-renewable.

Any program for increasing timber yields must therefore be based on careful management of the forest for long-term production. Large, short-term construction projects such as a pipeline, which might require substantial quantities of lumber and pilings, could lead to local depletion of the forest in some parts of the region and jeopardize the future viability of locally controlled enterprises that might be based on this resource.

11. *Precipitous exploitation of forest resources must be avoided, and the long-term value of the forest must not be sacrificed to meet the short-term requirements of an industrial development. The allowable cut should be established before making any large-scale harvest, such as a pipeline may require, to ensure that the forest resource can be maintained for future local use. However, policies should recognize that short-term demands, if not excessive, could provide a starting point or boost for local forestry enterprises.*

12. *Future forestry programs must also recognize the importance of the forest as habitat, not only in terms of its ecological significance for wildlife, but also, and as a consequence, in terms of its cultural and economic significance to native people. Its aesthetic and recreational uses must also be considered. On balance, these values appear to outweigh the benefits of timber cutting in most areas. Yet, even where timber is to be harvested, the native people's interest in the wildlife habitat that the forest provides must receive adequate consideration. Any program for increased forest use should, therefore, be consistent with fur and game conservation and harvesting.*

Nevertheless, forest resources in some areas offer an excellent opportunity for integrated local development. A complex of small-scale enterprises based on logging, the production of logs and lumber, and the construction of houses (both locally and in other communities) could provide some communities with a substantial additional source of income and employment. There is already a serious housing shortage in the Mackenzie Valley and Western Arctic, so it cannot be argued that there would be no market for an integrated regional housing construction industry, an industry that could be based on small-scale local units. There are already housing cooperatives in some of the communities, but to date they have concentrated entirely on the final assembly of prefabricated housing modules shipped into the North by southern suppliers. The considerable economic and social rewards that might be offered by the use of local materials for housing have been largely ignored in official policies.

Limited agricultural prospects exist in the Mackenzie Valley, mainly in small-scale gardening for local markets. For example, in 1943 the Mackenzie Valley was largely self-sufficient in potatoes, having then a production of almost 160 tons from an estimated total cultivated area of 300 acres, only part of which was used for potatoes. However, the experience with both lumber and vegetables has been that, as transport links with the South have improved, imports have become cheaper than local produce. In part this is a result of public policy and economic accounting systems, and they are subject to change. New techniques in small-scale gardening operations in the South might be usefully applied in the Mackenzie Valley and, if a pipeline is built, the use of industrial waste heat for greenhouse operations, as Professors Ed Maginnes and George Green suggested at this Inquiry (C6092ff.), should be considered. I am by no means suggesting that native people ought to become farmers, in the way that the federal representatives who framed the Prairie Treaties had supposed. Small-scale agricultural enterprises are merely one of a variety of options that are open to community-based and community-controlled enterprises in the Mackenzie Valley.

An exhaustive review of the potential for expanding renewable resource production in the North is unnecessary. Many reports have examined these possibilities at greater length, and I recommend for further consideration the following: the submission of Ruttan and T'Seleie to this

Inquiry (Exhibit F683); the reports of the Renewable Resources Project sponsored by Inuit Tapirisat of Canada (1975); the report of the Special Staff Group of the Department of Indian Affairs and Northern Development on *Development Agencies for the Northwest Territories*; the *Report of the Royal Commission on Labrador*; *Northward Looking, a Strategy and a Science Policy for Northern Development*, by the Science Council of Canada; and two documents produced by the Canadian Council on Rural Development, *A Development Strategy for the Mid-North of Canada*, and *Working Papers, Seminar, Environmentally Appropriate Technology for the Mid-North of Canada*.

Neither biologists nor resource managers doubt this general potential for an expansion of the northern economy based on renewable resources, even though our knowledge of the resource base is inadequate in its specifics. It need hardly be added that prescriptions for expanding production are not universally applicable to the entire Mackenzie Valley and Western Arctic. Some areas are richer than others, and some species in some areas are already harvested to capacity. Perhaps some groups of native people, who live in areas that are relatively poor in renewable resources, cannot hope to increase their production of fur or food in any significant way.

13. *Whereas there is an overall necessity to encourage and expand resource production, specific efforts must be tailored to the needs of individual communities and their local resource potential, in accordance with sound management principles.*

THE NEED FOR CASH

The basic problem is not the adequacy of the resource base but the realization of a cash income from it. To illustrate this point, let me return to my estimates of gross and net value of fur, fish and game production. The calculations in section two of this chapter imply that persons participating in the traditional economy spend a total of almost $3.5 million a year to outfit themselves with nets, snowmobiles, canoes, outboard motors, rifles and ammunition, gasoline, aircraft charters, and so on. These expenses amount to nearly $1,600 for each General Hunting Licence holder, a sum that appears to be consistent with the few estimates that have been based on detailed research into the operating, maintenance and depreciation costs for hunting, trapping and fishing. The most active participants would certainly spend more than this amount, but there must be many licence holders who spend less; as an average figure, $1,600 seems to be reasonable, and it adds weight to our general estimate that production costs amount to about 25 percent of the gross value of total production. By far the greater part of this estimated $3.5 million is spent within the Northwest Territories, and it is therefore evident that an expansion of activities based on renewable resources will benefit the local businesses that serve that sector.

It is important to note that this estimated $3.5 million is three times the present cash yield from trapping and substantially more than the most optimistic potential yield from this activity. We have no estimates of the net income that is at present derived from secondary activities based on renewable resources, such as commercial fishing, handicrafts and garment manufacture, but it would at least partly make up the difference. This differential does, however, highlight the need for cash from other sources to support the viability of the traditional sector as it now exists, and it demonstrates yet again why so many persons who identify themselves as trappers also work — indeed, may have to work — for wages. In some smaller communities, transfer payments, such as family allowances and old age pensions, can be important sources of capital for hunting.

Too often it is supposed that the development of renewable resources simply means more hunting, trapping and fishing, and that those who argue for it seek only to preserve an idyllic but irrelevant way of life in a museum environment. I cannot overemphasize the fact that this point of view has nothing to do with the goal of developing a sound economy based on renewable resources. Even the most optimistic estimates of the harvest potential of renewable resources do not suggest that every man, woman and child in the territories can harvest enough, not only to eat, but also to pay for all the other things they might want. I have made it quite clear that there is a need for cash that goes far beyond what is at present earned from that sector. An economy based on renewable resources does not mean simply a subsistence economy, although it would certainly encompass a subsistence component, the benefits of which, as I have noted, have been so often underestimated.

The objective of increasing renewable resource production is not, in the main, to increase domestic consumption of country food, for it seems clear that most native people already eat well off the land. Expanded production makes sense primarily if the new production is, in fact, surplus to domestic requirements.

Surplus production would have two beneficial uses. The first is for redistribution: native people, particularly those who live in larger centres, who do not have good access to country food, could then obtain the nutrition they require and desire at reasonable prices. This arrangement would increase the possibilities for intersettlement trade. The second use, which is the real key to successful renewable resource development as a basis for the northern native economy, is to generate cash income. This result can be achieved by marketing the surplus directly for commercial sale, not only for redistribution among native people, but also to non-native northern residents, and by using the surplus in further processing as a basis of small-scale industrial enterprises.

MARKETING

The success of any attempt to expand renewable resource production for commercial purposes will depend heavily on the ability to market these commodities. In the case of raw

furs, the markets are international and, on this scale, territorial fur production is small. Because it is virtually impossible for trappers to obtain adequate credit from local fur buyers, they have turned increasingly to selling their furs directly at auction. The Government of the Northwest Territories has taken positive steps to encourage this tendency, although further evaluation of the situation is necessary. Improvement of the prices paid to trappers can come only through cooperative efforts on the national level: it would be impossible for a territorial marketing board, if such a thing existed, to affect auction prices significantly by its own efforts.

Marketing food is a different problem. With the exception of some species of fish, it is generally considered that the production of food for export is impractical, for both biological and economic reasons. There is, however, a growing market for local sale, and it is not now satisfied by commercial caribou hunting, cropping the reindeer herd, and small-scale commercial fishing. This local market offers by far the most attractive prospects for commercial harvesting because it requires less marketing effort and lower transport costs to reach. It is also about the right size because, unlike the export market, successful entry into it would not create a demand so far in excess of supply that undue pressure would be placed on both the supply itself and on the suppliers' capacity to produce and distribute it.

14. *There should be a thorough examination of the possibilities of marketing foods locally. Both the federal and territorial governments have the option of giving preference to local produce wherever the resource base might permit increased production for local sale.*

Secondary Activities

Processing and manufacture of locally produced commodities could add significantly to employment and income. The chief opportunities in this direction appear to be fur tanning, garment manufacture, food processing, marine oil processing, sawmilling, log and lumber construction, handicrafts and similar cottage industries, and tourism. Enterprises that already exist in these areas could be increased or expanded. Others that have been tried in the past and failed should be re-examined in the light of present circumstances. Others that have never been tried may require innovative design and techniques. Many ideas for this sort of development have been suggested in the past, and there is no need to review them individually here.

Opportunities for native employment exist in the management of renewable resources, as well as in the design, technology, manufacture and maintenance of equipment for the harvesting and processing of these resources. Virtually no serious examination has ever been given to these latter possibilities and, although any major attempt to consider and implement these possibilities must await the settlement of native claims, thought should in the meantime be given to them.

15. *We must not assume that, following the settlement of claims, events will logically and easily take their course. Preparatory work now will facilitate an orderly and balanced development of the native economy in due course.*

Implications for Employment and Income

I have recommended nothing here that is really new. Many knowledgeable and capable people in both the public and private sectors have seen and discussed these possibilities. Some experiments have been tried, with mixed success, and I shall examine some of the reasons for their partial failure in the next section.

It should by now be evident that an economic sector based on renewable resources, which encompasses most or all of the enterprises listed above, is much more than subsistence activity that relies solely on traditional skills. The development of this economy will require scientific, technical, clerical, administrative, managerial and business skills. It will need the abilities and ambitions of younger people who have received schooling and training, and it will provide opportunity for them to stay in the North, to remain in their home communities. The oil and gas industry does not now offer these advantages in the same measure, and pipeline construction could not under any circumstances offer them.

It is not my purpose to estimate here how many jobs might be created by any particular occupation or enterprise or how many there might be in aggregate. Nor do I suggest that this sector could provide all the jobs that may be needed in the North of the future. The point that I do wish to nail down is that a healthy economy based on renewable resources offers employment and opportunities for secondary employment far beyond primary production, and it is employment of a type that native people repeatedly and everywhere told this Inquiry they want. Such an economy would offer a real choice to native people, not simply the imposed choice between industrial employment and welfare.

It is impossible to estimate at present the income levels, regional or individual, that might be generated by a fully developed renewable resource-based economy, but it would be nonsense to pretend that these could compete with wages earned on pipeline construction. Not many jobs anywhere do! But that choice is open to every Canadian: to work at home among family and friends and community, in a secure job and environment — or to go elsewhere in search of high-paying, if temporary and uncomfortable, even dangerous, employment. That is exactly why high wages are paid on the frontier, to induce people to work under these conditions. If native people are to have the choice that all other Canadians enjoy, then their own local economy must be strong enough to offer a real alternative. They will not be satisfied with less, nor would southern Canadians be satisfied if their only choice of

employment lay between frontier oil development and subsistence agriculture.

Problems in Developing the Renewable Resource Sector

This is not the first report to emphasize the great potential that exists for development and modernization of the renewable resource sector of the northern economy, a potential that cannot be doubted and, that is greater than is commonly supposed. Yet potential is one thing, its realization is another. We saw in Volume One that the relative failure so far to realize this potential has been caused by the devaluation of renewable resource development in public policy and in federal priorities. Development policy for the North has proceeded on the premise that only the non-renewable resources found there can make a significant contribution to the national economy. By comparison, the maximum potential output of the renewable resource sector is small indeed. Yet, to suppose that the only hope of the native people of the North for their economic future also lies in non-renewable resource development flies in the face of the overwhelming weight of evidence heard before this Inquiry.

With the legacy of past policies and developments, the realization of the renewable resource sector's potential will not be easy. In this section, I shall examine some of the problems and their implications that must be faced. Previous difficulties with renewable resource development have occurred at two levels: individual enterprises and the renewable resource sector as a whole. The evidence of Ruttan and T'Seleie, Donald Snowden, Ralph Currie and Sam Stanley provided many useful observations on these problems at both levels. There is also the problem of access to the resources on which this development is to be based.

Problems at the Enterprise Level

Northerners, and those who know the North, are highly conscious of the failures of many small-scale projects or enterprises based on renewable resources. Almost all of them have been associated with government, which to many is explanation enough, and some of them are remembered as having been simply ludicrous in conception, design and implementation. To many ears, the very mention of renewable resource development carries with it the sound of failure.

This Inquiry heard a great deal of evidence and many opinions about actual renewable resource-based enterprises, in many cases from persons who were directly involved in them. Successful or not, they faced many of the same specific problems. The list is long and it includes inexperienced or even incompetent management and personnel, failure to develop appropriate technology, poor quality machinery and facilities, inadequate maintenance, slow resupply, inadequate or insecure financing, lack of local involvement and control, improper understanding of the local situation, failure to take advantage of local expertise and skills, jurisdictional problems within governments, rapid turnover of administrative personnel in Ottawa or Yellowknife, bureaucratic red tape, and inability to make quick decisions and to take quick action. Many of these problems can be attributed to the difficulties inherent in direct government involvement and administration of local projects. Other problems are probably soluble with greater experience and understanding of local circumstances. Yet it appears that the solution of problems at the level of individual enterprises will be of little consequence unless the larger issues that face renewable resource development in the North are also resolved.

Problems Related to the Northern Economy as a Whole

Little attention has been given to the much larger forces that work to the detriment of successful development of renewable resources and the reason is clear. Because this kind of development has for so long had such low priority, those responsible for it or for promoting it have been distant, either geographically or hierarchically, from the centres of power. But what are these larger problems and how might they be overcome?

A variety of jurisdictions with differing and changing philosophies has initiated locally based development in the North. Sometimes cooperatives have been promoted, sometimes individual enterprises. A project may be started with overriding social goals, then abandoned because it does not make an economic profit. Some projects are nominally conceived as having distinctively Inuit or Dene objectives, then are expected to compete with non-native enterprises on the latter's terms. In all of these enterprises, native people are subjected to the whims of outsiders who have control. They are not told of the conflicting objectives that underlie otherwise mysterious changes in policy or abandonment of enterprises. If their objectives are both unclear and imposed, the participants can hardly be expected to work toward them effectively.

16. *The financial profit and loss of an individual enterprise should not be the only criteria of success. Social goals such as training, leadership, community solidarity and well-being, personal satisfaction from useful employment and reduced welfare dependence must also be counted against economic losses or subsidies to the enterprise. Too often the measure of success is imposed on local enterprise by the external agencies that control it, rather than being developed and understood by the community itself. Whatever the measures of success are to be, they must be consistent.*

The same observation can be applied to the northern economy as a whole. For example, although the unit capital cost of housing may be cheaper as a result of importing

prefabricated modules, the total benefits to the North in terms of local enterprise, training, employment and income, would be far greater if houses were built from local logs and lumber. Louise Clarke, in her evidence, pointed out that the success of log construction in the North will depend on developing new technology and designs. Lack of adequate housing is one of the most serious social and economic problems in the North, and its solution could bring many social and economic benefits. Nevertheless, narrow economic accounting systems and narrowly conceived policy objectives stand in the way of this praiseworthy goal.

Renewable resource development has always been bedevilled by piecemeal approaches. The very idea of an integrated, locally based economy implies an interdependence among enterprises and supporting agencies that has never in fact existed. An enterprise that could flourish among other related and healthy enterprises could just as easily wither and die alone in a hostile environment. Snowden, in his evidence to the Inquiry, stressed the need for an integrated approach to renewable resource development in terms of the multiplicity of resource opportunities as well as of the combination of skills, innovations and organization needed to bring such projects to fruition. The example of housing illustrates the need for the integrated approach that has been lacking so far. In the case of fur marketing, piecemeal solutions at the local level will never amount to much unless the problem is also considered at the territorial and, indeed, the national level.

The Problem of Capital

I have already pointed out that subsistence activity combined with trapping usually cannot generate enough capital to sustain itself. Additional inflows of capital have in the past come from transfer payments and wage employment, increasingly from the latter. The mixed economy, which the majority of native people have told this Inquiry they want to maintain, means a continuation of something like this situation. For those who choose to trap full-time, grants and loans may be required, although they will serve the purpose only if they are large enough to outfit the trappers properly. Insufficient provision of capital for trapping (or, indeed, for other similar ventures) is a sure prescription for failure. One way in which this problem may be solved is for hunters and trappers to control the distribution of funds through their own organizations, because they are in the best position to know their members' needs. For many hunters, however, occasional trapping may provide a welcome addition to income, but the bulk of their cash requirements will have to come from employment. If this employment is to be generated by the renewable resource sector, then the kind of enterprises we have discussed must be established.

Employment, loans, grants and so on can meet only the individual's investment requirements. Investment at the level of enterprise or infrastructure cannot at the outset be generated by the personal savings of hunters and trappers or by any surplus they might generate by those activities. Financing at this higher level will have to be more generous than it has been in the past. More important, however, this financing must also have both greater administrative flexibility and longer-term stability and continuity than has characterized previous government-administered enterprises.

The various native claims proposals include provisions for the transfer of capital to native control, chiefly through royalties on non-renewable resource development. Evidence from Alaska suggests that this is not without problems: it can create rather than reduce dependence on externally controlled rapid industrial development. Capital transfers will not, in themselves, assure the appropriate financing of renewable resource development unless specific provisions for that purpose are incorporated in native claims settlements. Ultimately, renewable resource-based enterprises and, indeed, the sector as a whole may be able to generate their own capital requirements, but that is not possible now.

17. *Until the renewable resource-based sector in the north is able to generate its own capital, government could make funds available as a matter of public policy pursuant to such programs as the Western Northlands, established under the Department of Regional Economic Expansion (DREE), or pursuant to the* Agricultural Rural Development Act (ARDA).

The Problem of Access

Renewable resource development raises difficult questions about access to the resources themselves. There are at least three points of view about access to fur, fish and game in the North. One is to give open access to all northern residents regardless of ethnic origin, economic status or occupation. Another is to limit access to only native people, but again without distinction according to economic status or occupation. A third is to limit access to only one class of native people; those who are hunters and trappers by profession. Public policy has veered from one to another or to a combination of all of these options at various times in the past. The first option prevailed until the late 1920s in most of the Mackenzie Valley and Western Arctic, but was then replaced by the second. Since the 1960s, there has been a gradual shift back towards the first option. In the mid-1960s, serious consideration was given to a limited version of the third option, that is, to restrict trapping rights to native people who were without wage employment.

Native people have generally opposed the first option and have had mixed feelings about the third. Certainly all of the current claims proposals are at one in seeking to enshrine native hunting and trapping rights and to transfer control over access to native people themselves. The federal government's statement on the *Political Development in the Northwest Territories*, released August 3, 1977, contemplated that land and renewable resources will in some instances be

turned over to the Government of the Northwest Territories and in other instances to native people. Whether or not access to fur, fish and game – or indeed to other renewable resources – ought to be in the control of or limited to native people will depend on the conditions that are attached to any transfers made by the federal government and on the decisions that the territorial government and the native people are disposed to make thereafter.

The choice between the second and third options is again a matter on which native people will have to pass judgment, but it is nonetheless worthy of some comment here. Access to resources is an essential feature of a subsistence economy. To limit that in any significant way must necessarily undermine the traditional basis and the continued viability of the subsistence economy. The idea of specialization and professionalization of harvesters, on the other hand, implies a division of labour and in such as case there might well be persuasive reasons to limit access.

Options for the Future

Whatever the course of renewable resource development in the North, two fundamental points should be made clear. Although these points have already been stated in the course of the argument in other chapters of this report, they are matters that should be emphasized in relation to the whole question of renewable resource development.

First, I am not assuming that such development should be the sole form of economic development in the North. Large-scale industrial development is obviously going to occur in parts of the North, and all northerners will become involved in some way with such development. It is the prior development of renewable resources that is of central importance: unless that option exists and unless it is able to offer real opportunities to native people of the North, the undue dependence on the non-renewable sector that I discussed in Volume One will occur.

18. *The critical thing is that priority be given to the strengthening of the renewable sector now. Parallel development is not, of course, without its problems: conflicts of land use and conflicts of interest between southern and northern objectives will occur. But the terms of a settlement of native claims must secure for those whose interests lie within the renewable resource economy an effective voice in how such conflicts are to be resolved.*

I have discussed this subject in Chapter 12 of Volume One. Only in that way can the long-term viability of an economy based on renewable resources be assured.

Secondly, none of the argument here should be understood to be a nostalgic look back towards some idyllic era in the recent or remote past to which native northerners should be urged to return. That was no part of their submission to the Inquiry, it was no part of the argument of Volume One, and it is no part of the argument of Volume Two. In the wake of a settlement of native claims, native people will themselves manage the renewable resource economy. They will effect the balance between subsistence-oriented hunting and fishing, individual trapping for trade, and more elaborate development projects that are based upon renewable resources. In each of these activities there will be modernization. Indeed, such modernization has been taking place, at the individual level, throughout this century. Dene and Inuit adaptability as renewable resource harvesters has been remarkable, and, given appropriate institutions and possibilities, they will continue to adapt.

19. *If renewable resource development is to succeed, then the continuing and serious impediments to it must be clearly acknowledged, understood and removed. A favourable climate must actively be created for such development, otherwise individual projects and enterprises of the type I have discussed will be operating in a hostile environment that will jeopardize their success.*

I have already reviewed some of the specific impediments that hobbled earlier attempts to develop renewable resources. It must also be recognized that, to some extent, the ideology and objectives of a native economy based on renewable resources are not the same as those of non-native economic enterprises in the North. Today, as in the past, we hear the suggestion that public support should be withdrawn from native enterprises because they constitute unfair competition to non-native business. Some people expect native enterprises to show quick profits to justify their existence. Some suggest, explicitly or implicitly, that enterprises based on renewable resources merit support only if they can generate large surpluses and tax revenues to support the existing structures of commerce and government in the North. These attitudes, which are clearly at odds with native people's objectives and their economic future, appear to be widely held, and they explain, in large measure, the lack of enthusiasm for renewable resource development. If they continue to prevail among the persons who make or influence policy, then an economy based on renewable resources that so many native people desire has no viable future, and native people will never have a real choice.

20. *The production and processing of renewable resources must be regarded positively as a desirable social and economic goal. Not only should the resource base be protected, but the well-being of the harvesters should also be promoted. Just as good farmland in the South needs able and willing farmers to make use of it, so the northern fur, fish, game and timber resources can become useful only with competent and adequately financed harvesters and processors in the North.*

This approach will be far more beneficial to northern people than a patchwork assemblage of individual assistance programs for one or another industry or enterprise. In the case of the fur industry, for example, floor prices, production

subsidies, unemployment insurance for trappers — all of which have been proposed in the past — may serve to channel additional funds to individual hunters and trappers, but they cannot ensure the long-term health of the fur economy as a whole. Even the outpost camps and small settlements could eventually wither and disappear, despite assistance, in the face of an overwhelming orientation and drive towards industrial development based on the non-renewable resources of the North. I do not want to underestimate or belittle the importance of these specific programs, which are commendable in their intent and are presently meeting a real need in many parts of the North. Nevertheless, on their own they are not enough. However, in the context of a generally favourable climate and policy towards the renewable resource sector, even these programs could be made both more effective and more efficient.

The creation of this favourable climate will depend not only on a reorientation of government policy and programs towards that objective, but also on a clear understanding and commitment that an economy based on renewable resources must be developed under native control and on native initiative. Even the outpost camp and trappers' assistance programs cannot realize their full potential as long as their administration remains exclusively or even largely in the hands of government.

21. *The rules by which outpost camps and trappers' assistance programs operate must be clearly understood and accepted by their users, and they must meet needs that have been identified by participants in the programs.*

22. *Native people consider renewable resources, particularly fur, fish, game and timber, to be essential to their identity and their way of life. These resources must be the cornerstone of native economic development, and neither the initiatives nor the benefits can be appropriated by others. It follows that any attempt to develop these resources by means or programs that are non-native in design and execution are not only destined to fail in the long run, but they will also generate resentment and hostility.*

23. *A proper role of government, whether federal or territorial, is to facilitate the availability of capital and of technical assistance to the people under its care. The problem of capital should, as I have already said, be resolved primarily through the settlement of native claims, although funds from applicable existing government programs should be made available in the interim. If, however, funds continue to be made available, and programs continue to be developed and administered only under tight government control and regulation, then native people will be suspicious of both the motives and the benefits, and these programs will end in failure. The control and administration of such developments must lie in the hands of native people.*

The viability of the native economy, based on renewable resource development, must depend on its being largely separate, both geographically and in orientation, from the operations of the non-renewable resource sector. The movement of native people between the two cannot and should not be excluded, but, if the renewable sector thrives, such movement will be minimized. Each native community and every individual will have to decide on which economic mode primarily to rely. Although the two economies may not be mutually exclusive, there will be a tension between them. Hard choices will have to be made both by individuals and by the organizations that represent them.

The task of developing the renewable resource sector will not be easy, either for native people or for governments. Both the history of failure and the potential for future failure must be overcome. But the evidence before this Inquiry leads me to the conclusion that, if native people are to be full citizens and participants in the North of tomorrow, it can and must be done.