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# Manpower Projections: Atlantic Canada, Some Policy Considerations

Harish C. Jain

*This article attempts to describe, briefly, the present manpower situation in the Atlantic Region of Canada vis-a-vis the policies pursued by the federal and provincial government agencies in connection with the manpower problems of the region. Our purpose is twofold: First, to state reasons for the necessity of forecasting manpower requirements at the regional level and the relevance of manpower projections to the problems of manpower utilization. Second, to describe the methodology of forecasting manpower requirements and training needs for the Nova Scotia Department of Labour to illustrate what can and needs to be done at the regional level. Research and data gaps in the forecasting of manpower requirements and supply along with some concluding remarks form the evaluative part of this article.*

The Atlantic Region of Canada is characterized by high rates of unemployment, under-utilization of human resources, significantly lower levels of per capita income as well as other indicators of economic retardation. In fact, despite marked changes in the fortunes of the Canadian economy, the income gap between the Atlantic Region and the rest of Canada — roughly thirty percent below the national average — has persisted for several

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decades.<sup>(1)</sup> However, it is only recently that the policy makers at the national and regional level have been showing growing awareness and deep concern with these problems, particularly those associated with the affective utilization of manpower resources.<sup>(2)</sup> Human resource development, therefore, has become the focus of increased public investments in education ; also the role that trained manpower can play in the economic development of a nation or a region is receiving its due recognition.<sup>(3)</sup>

Human resource development is the process of increasing the general knowledge, specific skills, and the potential capacities of all the people in a society.<sup>(4)</sup> Dr. John Deutsch, the former Chairman of the Economic Council of Canada has suggested that in Canada the development of human resources is « . . . an increasing important factor in the growth of material welfare, » and that « . . . the rate of return on investment in education, research, and training has exceeded the rate of return on investment in capital facilities. . . »<sup>(5)</sup> Similarly, Dr. Theodore Schultz has urged underdeveloped and developed countries to spend more on education and

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<sup>(1)</sup> Economic Council of Canada, *Second Annual Review, Towards Sustained and Balanced Economic Growth* (Ottawa: Queen's Printer, 1965), p. 136. Also see, Atlantic Provinces Economic Council, *Productivity, The Use of Human Resources, and The Income Gap* (Fredericton: APEC, 1967), pamphlet No. 11 ; William J. Woodfine. « Canada's Atlantic Provinces : A Study in Regional Economic Retardation, » in *Economics in Canada*, (eds.) M. M. Watkins and D. F. Forster (Toronto : McGraw-Hill, 1963), pp. 312-13 ; Hugh Whalen, « Public Policy and Regional Development : The Experience of the Atlantic Provinces, » in *The Prospect of Change*, (ed.) A. Rotstein (Toronto: McGraw-Hill, 1965), p. 106.

<sup>(2)</sup> For instance, the creation of a regional economic development portfolio in Prime Minister Trudeau's cabinet, the relatively recent establishment of a separate Department of Manpower and Immigration, the creation of ARDA and the Area Development Agency and the designation of numerous areas across the country to qualify for special measures of federal assistance for economic or industrial development because of high levels of unemployment and slow rates of growth are some of the important federal measures that take cognizance of the importance of human resource development, among other factors, in order to achieve an adequate rate of economic growth.

<sup>(3)</sup> Harold Goldstein, « Projections of Manpower Requirements and Supply, » *Industrial Relations, A Journal of Economy and Society* (May, 1966), p. 17.

<sup>(4)</sup> Frederick Harbison and Charles A. Myers, *Education, Manpower and Economic Growth : Strategies of Human Resource Development* (Toronto: McGraw-Hill, 1964), p. 2.

<sup>(5)</sup> John J. Deutsch, « Canada's Economic Problems, » *Queen's Quarterly*, Vol. LXVIII, No. 4 (Winter, 1962), p. 537. (Originally, An Address To Annual Meeting Canadian Chamber of Commerce, Halifax, Nova Scotia, October 3, 1961.)

training, because human capital yields a return as great or greater than capital in the form of tools and building. <sup>(6)</sup>

The concept of « active and positive manpower policy » is concerned with helping people to respond effectively to economic and technological change. Its object is « to bring about the matching of the supply and the demand for labour in specific localities and occupations in a way that manpower resources can be most productively utilized. » <sup>(7)</sup> It is concerned with effectively combatting the problems of shortages developing in certain occupations alongside substantial unemployment in others.

A knowledge of future industrial structures of a country or a region and the economic and social effect of technology on the occupational pattern become crucial in this respect. Hence, long term projections of manpower requirements and supply become important. According to Professor W. Lee Hansen, « Projections are designed to increase the stock of knowledge about future labour market conditions and thereby to improve the level of decision-making on the part of workers, potential workers, counselors, employers, educator-trainers, and manpower planners. » <sup>(8)</sup>

The primary focus of this paper is on the educational and training objectives of manpower projections from the point of view of regional and provincial governmental agencies, especially in the Atlantic Region. As noted earlier in the article, the Atlantic Region has a particularly unfavourable set of characteristics. In this context, we will describe below the manpower situation in this region and indicate the relevance of manpower projections to this situation.

### Manpower Utilization in the Atlantic Region

In a study, « An Analysis of Interregional Differences in Manpower Utilization and Earnings, » Denton concludes as follows:

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<sup>(6)</sup> See Paul A. Samuelson, *Economics, An Introductory Analysis*, Seventh Edition (New York : McGraw-Hill, 1967), p. 114.

<sup>(7)</sup> Economic Council of Canada, First Annual Review, *Economic Goals For Canada To 1970* (Ottawa: Queen's Printer, December, 1964), pp. 170-171. Also see, W. R. Dymond, « Co-ordination of Active Manpower Policy in the Enterprise with National Manpower Policy, » A Paper to International Conference on Methods of Adjustment of Workers to Technical Change at the Plant Level in Amsterdam (Nov. 15-18, 1966).

<sup>(8)</sup> W. Lee Hansen, « Labour Force and Occupational Projections, » *Proceedings of the Industrial Relations Research Association, 18th Annual Meeting, 1965*, p. 10.

The effect of relatively low basic rates of earnings is reinforced by very high unemployment rates, an unfavourable age structure, and low labour force participation rates. Seasonal fluctuations are severe, the general educational level of the population is lower than in other regions, and a large proportion of the population live in rural nonfarm areas which tend to have low income levels. <sup>(9)</sup>

*Emigration.* As a result of low incomes and a lesser degree of economic development in the Atlantic Region, emigration from this region creates a perplexing problem. On the one hand, there is unemployment and underemployment, which makes emigration from the region desirable; on the other hand, the quality of the emigrant labour force creates difficult problems of retraining and improving the quality of the remaining largely unskilled labour force. It is usually the young, trained, more vigorous and ambitious natives who leave the Atlantic Region. In addition, the incidence of social and economic burdens fall more heavily on a declining portion of the total population.

It would appear from the above discussion that one of the most important reasons for the income gap between the Atlantic Provinces and Canada as a whole is the underutilization of human resources. A systematic and planned program of forecasting of manpower requirements and supply is necessary for the following reasons.

## Reasons for Making Regional Manpower Forecasts

### PROVINCIAL AUTONOMY

In Canada, provinces have exclusive jurisdiction on educational matters. Moreover, in matters of industrial relations legislation, provincial governments legislate for ninety or more percent of the country's labour force. The federal government influence in the labour market has been indirect, mainly by way of inducing provincial participation on a co-operative basis, in federally sponsored manpower programs, and through monetary and fiscal policies. In view of the important role played by regional and provincial government agencies, the absence of labour demand and labour supply information for the region and individual labour areas becomes a barrier to effective educational planning and has implications for training as well.

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<sup>(9)</sup> Frank T. Denton, *An Analysis of Interregional Differences in Manpower Utilization and Earnings*, Economic Council of Canada, Staff Study No. 15 (Ottawa: Queen's Printer, April, 1966), p. 14.

### HEAVY RELIANCE ON EXPORT TRADE.

In the Atlantic Region, the economy is much more dependent on exports than the Canadian economy as a whole. For instance, in a report of 1964 to the Atlantic Provinces' Research Board, Professor John F. Earl of the University of New Brunswick estimated that 20 to 23 percent of gross regional income is generated in the export sector of the Atlantic Provinces, and notes that, « this is a high proportion by Canadian or any other standards. » He further adds, « It would come as a surprise . . . if it were found that more than say 10 to 15 percent of the commodity output of the region is sold in the rest of the country. » Manpower forecasts, thus, take on an increasing importance for provincial policy makers since external factors could cause a change in labour demands in the region.

### MARITIME MERGER.

A proposal has been made, repeatedly during the last several years, for political and economic integration of the maritime region <sup>(10)</sup> to take advantage of the common economic base and to reduce administrative costs, etc. For instance, according to a recent report, an official study — costing \$100,000 — has been authorised by the governments of New Brunswick, Nova Scotia, and Prince Edward Island. <sup>(11)</sup>

In view of the many similar socio-economic characteristics of the Atlantic Region, a model of manpower forecast will help the region's manpower planners to undertake a joint attack on the region's manpower problems. Before outlining this model, it might be helpful to define our concepts and state our assumptions.

### Concepts

For our purposes, manpower projections are an attempt to combine quantitatively certain economic and demographic variables which have shown consistent past relationships and a further set of assumptions per-

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<sup>(10)</sup> Newfoundland joined the Confederation in 1949. Prior to 1949, three provinces, Nova Scotia, New Brunswick, and Prince Edward Island, were called maritime provinces, and the three provinces, together with Newfoundland, are known as the Atlantic Region.

<sup>(11)</sup> « Merger Study in Maritimes Gets Go-Ahead, » *The Financial Post* (April 20, 1968), p. 36. Also see, John F. Graham, « An Economist Looks At Maritime Union, » A Paper to the Conference on Maritime Union, Mount Allison University, Feb. 5-7, 1965.

taining to future developments. <sup>(12)</sup> Among the assumptions which underlie most projections are those regarding the level of unemployment, the rate of economic growth, and the rate of productivity change. For instance, the level of activity in the economy as a whole affects the number of workers in certain industries. Obviously, changes in any of these assumptions would bring about very different results. Sensitivity analysis of varying assumptions can, perhaps, demonstrate how great the variations in estimates will be.

According to a report on manpower projections « alternative assumptions should be provided whenever reasonable so that relevant alternative policies can be evaluated. » <sup>(13)</sup> Assuming that we use the unemployment variable, we know that of all the regions in Canada the unemployment rate in the Atlantic Region has been one of the highest and most persistent. Here two alternative assumptions might be a 4 percent unemployment rate in the target year and another at 7.5 percent; the former close to full employment according to the target set by the Economic Council of Canada for the nation as a whole and the latter on the basis of average unemployment rates during the last decade or so in the region.

This would highlight the need for changes in the present government policies firstly by assuming the proportions of the problem of underutilization of human resources in the region if current policies continue unchanged (at 7.5 unemployment rate) and secondly what changes in programs and policies need to be introduced if the 4 percent unemployment level is to be achieved.

Some of the important variables discussed above have been taken into consideration in the manpower research program, pertaining to manpower projections, of the Nova Scotia Department of Labour.

Given a regional manpower plan, the chart depicts the various steps to be undertaken in order to derive a forecast of manpower requirements and supply by occupation and education. Once the manpower requirements are obtained, these should be put alongside estimates of manpower supplies. Comparing the manpower plan with these estimates might suggest policy measures for the regional labour market and for education and training.

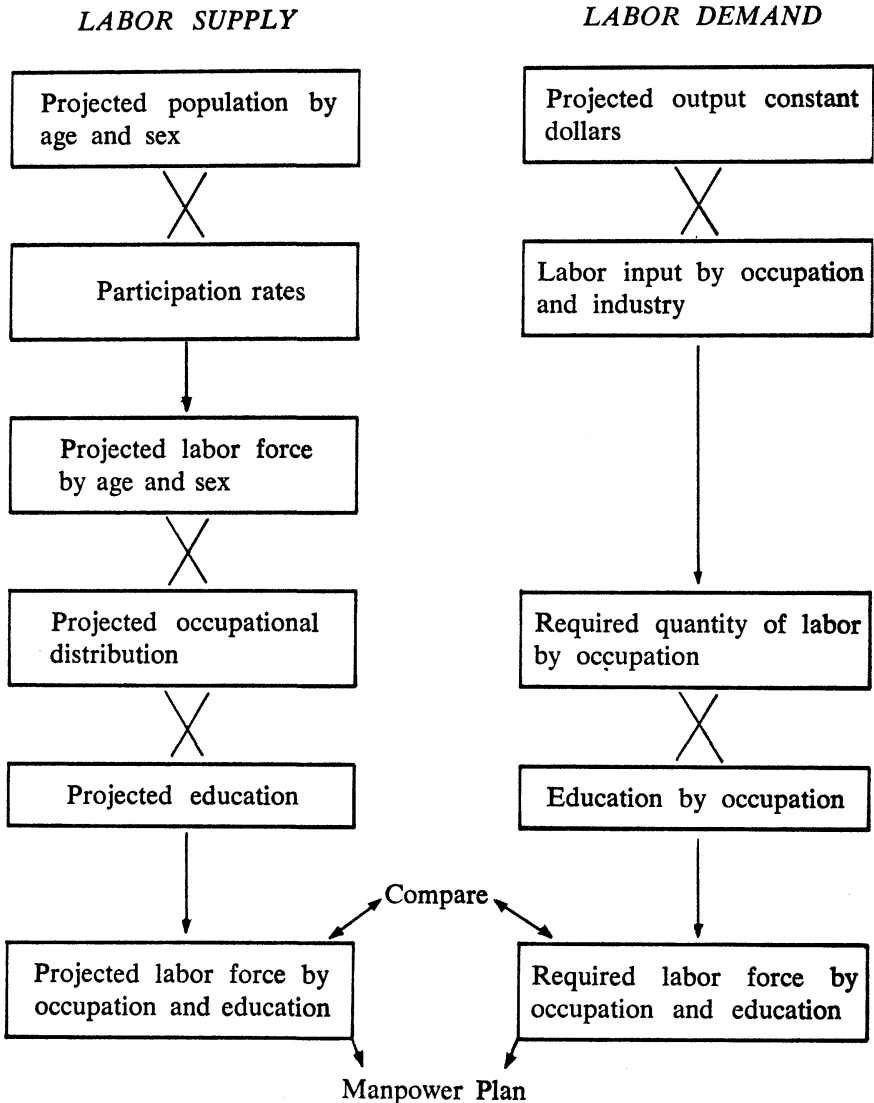
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<sup>(12)</sup> *Manpower Projections: An Appraisal And A Plan Of Action*, Report of the Working Group on Manpower Projections to the President's Committee on Manpower, Manpower Administration, United State Department of Labor, August, 1967, pp. 11-12.

<sup>(13)</sup> *Ibid.*

### Manpower Research Program of the Nova Scotia Department of Labour

The following chart of manpower forecasting is a partial attempt at developing a model which could be usefully applied at the Atlantic Regional level.





A description of the research program of the Nova Scotia Department of Labour, which follows this chart, is provided below.

#### RESEARCH STUDIES FOR LONG-RUN MANPOWER REQUIREMENTS

A study entitled *Manpower Training Requirements in Nova Scotia 1970 and 1975*, made available for the first time at a provincial level, detailed information on the manpower requirements for principal industrial sectors, major occupational divisions and specific occupations.<sup>(14)</sup> The population projections on which this study was based were made by the Central Research and Development Division of the Dominion Bureau of Statistics. The application of participation rates projected in the light « of a number of specific demographic and social factors which are known to influence such rates » provided labour force projections by age and sex. Although it was recognized that data limitations and inadequate forecasting techniques made the projection of occupational requirements difficult, it was believed that an examination of past trends could yield useful insights into the occupational structure in the two terminal years (1970 and 1975). The application of projected levels of education completed the projection of labour force by occupation and education.

Professor Judek stated in his introduction that, « . . . a lack of data made it impossible to establish the relationship between output and employment in various industrial sectors of the Province. » Further research is, therefore, in process by Professor Proulx of the University of Montreal. Professor Proulx's study is designed to develop « Manpower Coefficients » which will show the labour input by selected occupational groups per thousand dollars output. A preliminary report of this study was published in an earlier issue of this magazine. This study, when combined with industry output estimates will indicate the quantity of labour by occupation that will be demanded and it will assist in providing estimates of industry employment requirements.

#### RESEARCH STUDIES FOR SHORT-TERM MANPOWER REQUIREMENTS

The Department of Labour's shorter-range program of manpower research has consisted of the following types of studies:

*Intensive Studies at Industry Level.* It was believed that expanding the production of these reports would result in the availability of more data at the policy making level and would be useful for occupational pro-

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<sup>(14)</sup> This study was undertaken by Professor S. Judek of the University of Ottawa and jointly financed by the federal and provincial governments.

jections. For instance, a study of manpower requirements in the construction industry by Professor Comeau was considered helpful in planning apprenticeship programs for the future and reviewing the existing apprenticeship trades in the province.

*Intensive Studies at Plant Level.* For instance, a pilot survey entitled *Cosmos Imperial Mills: A Case Study in Labour Force Recruitment and Training* was undertaken with a view to formulating a methodology for assisting individual companies in manpower planning and short-term forecasts of their personnel needs and training. The overall plan was to encourage and assist private firms in maintaining personnel records and reviewing their manpower training needs to take advantage of the various federal and provincial training programs.

*Special Labour Force Studies.* This program included special labour force studies in order to determine the characteristics of the present labour force and help project manpower supply of special groups such as older workers, women, etc. Towards this end, a special statistical booklet on the Nova Scotia Labour Force was compiled and a statistical and analytical study of older workers was also published.

### **Research and Data Gaps**

The frontier of manpower projections in Canada is regional and local. As has already been suggested, ninety percent or more of the labour force in Canada comes under provincial jurisdiction in matters of industrial relations. Educational and vocational training are also exclusively within the domain of the provincial authorities despite federal funding and cooperative sharing of training and other costs.

It is, therefore, clear that on a regional and local level, disaggregated local labour market data are essential. Two sorts of needs may be distinguished; a) more intensive use of existing information, and b) the development of additional information. As an example of the first, the Dominion Bureau of Statistics starting from 1964 has made available monthly breakdown of information on employment, labour force, unemployment, etc., for the four Atlantic Provinces separately; this could be further strengthened by more intensive analysis and use of information collected on mobility patterns by special questions included at designated intervals in this monthly labour force survey. Lack of answers to questions such as, what factors induce people to move out of the region and what are their characteristics, interprovincial flow of persons, especially those leaving Atlantic Provinces, is a particularly significant gap in our information.

Secondly, there is considerable dearth of information at national and regional levels making it urgent to make available additional data. Commenting on this dearth, Professor Meltz points out that, « . . . there is a virtual absence of projections of general economic conditions. <sup>(15)</sup> Moreover, he goes on to say, « The provinces only have output data for some selected industries and without output data one can only guess at productivity figures. For statistics on occupations and education, the only comprehensive data that can be utilized are based on the decennial population census. » Hence, « . . . in terms of the occupation and education dimensions we have virtually no statistics outside the decennial census. » <sup>(16)</sup>

This information gap makes it necessary for the various federal agencies in the labour market information field to develop additional information and methods which could be utilized by the regional analysts as a basis of their projections. It is important that a national framework of projections be developed so that manpower projections for different regions in the country could be based on a consistent and common framework. This, combined with the knowledge available at regional level, may make possible much better projections for regions and localities than could be made at either a national or regional level alone.

The relatively recent establishment of the Manpower and Immigration Department, the Economic Council of Canada and a renewed emphasis on developing manpower statistics and analysis in the Dominion Bureau of Statistics hold promise for additional information on national income accounts, output and labour market data on a disaggregated basis. This will greatly assist the provinces in discharging their responsibilities for education, training and retraining of their manpower resources.

## Conclusion

In this paper, we have suggested that improved quality of the human factor in production is relatively more important as a contribution to long-term economic growth of the Atlantic region and Canada as a whole than is the application of capital and technology.

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<sup>(15)</sup> Noah M. Meltz, « Labour Market Information and Analysis in Canada, » in *The Canadian Labour Market, Readings in Manpower Economics*, (eds.) Arthur Kruger and Noah M. Meltz (Toronto: Centre for Industrial Relations, University of Toronto, 1968), pp. 221-42.

<sup>(16)</sup> *Ibid.*, « The Applications and Limitations of Manpower Forecasting, » Special Planning Secretariat, Privy Council Office, Ottawa, 1965.

It is therefore absolutely necessary to prepare a regional manpower plan on the basis of up-to-date information on current trends in the size and composition of the labour force, its changing occupational and industrial structure, and on-going forecasts of the short, medium, and long-run manpower requirements for training and education. A possible model for forecasting regional manpower requirements and supply has been provided.

While a regional manpower plan is necessary to the development of human resources in the Atlantic Region, it appears that the fundamental solution to the manpower problems of the Atlantic Region lies in that action oriented policy area which is designed to produce a rapidly expanding number of employment opportunities. This, then, calls for overall policies to increase aggregate demand along with those designed to combat structural unemployment. These micro and macro economic policies need to be pursued simultaneously and coordinated by the federal and provincial governments.

Moreover, the regional federal agencies such as the Atlantic Development Board, Area Development Agency, Agricultural Rehabilitation and Development Agency, etc., and private agencies such as the Atlantic Provinces Economic Council ought to be encouraged to coordinate their efforts in regional economic and manpower planning and projections and in presenting policy recommendations for the consideration of the respective federal and provincial government policy makers.

Similarly, coordination of economic and manpower planning among the various departments within each of the provincial governments and among the four provinces of the Atlantic Region is necessary if efficient utilization of manpower is to take place. These efforts should be supplemented by establishing an active tri-partite Board composed of leaders of industry, labour, and government departments to continually assess the manpower situation in each of the four provinces.

## **LES POLITIQUES DE MAIN-D'OEUVRE DANS LES PROVINCES MARITIMES**

Les provinces atlantiques sont caractérisées par un haut degré de chômage, par une sous-utilisation des ressources humaines, par un revenu per capita inférieur à celui du reste du pays et par d'autres indicateurs d'arréage économique. Il faut cependant noter l'intérêt manifesté dernièrement par l'établissement de politiques de main-d'oeuvre (aux niveaux fédéral et provinciaux) traitant de ces problèmes et surtout de ceux relevant d'une mauvaise utilisation des ressources humaines.

Cet article a pour but de faire ressortir les objectifs en éducation et en formation propres aux projections en main-d'oeuvre faites par les centres de main-d'oeuvre provinciaux et régionaux, et ce surtout dans les provinces de l'Atlantique.

#### L'UTILISATION DE LA MAIN-D'OEUVRE DANS LES PROVINCES MARITIMES

Suite au bas niveau des revenus et au degré plus faible de développement économique dans cette partie du Canada, l'émigration cause de sérieux problèmes à cette région.

Il semble qu'une des raisons qui expliquent la différence de revenu entre les provinces atlantiques et le reste du pays soit la sous-utilisation des ressources humaines. Ainsi, une planification systématique des exigences et de l'offre de main-d'oeuvre est nécessaire pour les raisons suivantes :

- a) l'autonomie provinciale en matière d'éducation ;
- b) l'importance des exportations à partir de ces régions ;
- c) la fusion des provinces maritimes.

#### DÉFINITION DES CONCEPTS

On entend par projection en main-d'oeuvre une tentative de combinaison de certaines variables économiques et démographiques quantitatives dont les corrélations sont demeurées stables dans le passé et d'un ensemble d'hypothèses au sujet des développements futurs. Ces hypothèses touchent le niveau de chômage, le taux de croissance économique et le taux de changement dans la productivité.

#### L'EXEMPLE DE LA NOUVELLE ÉCOSSE

Notons en premier lieu que la Nouvelle Écosse a fait des recherches dans le but d'établir les exigences en main-d'oeuvre en longue période (1970-1975). Pour la première fois au niveau provincial, la Nouvelle Écosse rendait disponible une information détaillée sur les exigences de main-d'oeuvre pour les principaux secteurs industriels, pour de grands groupes d'occupations et finalement par sortes d'emplois.

Pour ce qui a trait à la courte période, les études portèrent au niveau de l'industrie, au niveau de l'entreprise et au niveau de certains groupes occupationnels spéciaux.

#### LA RECHERCHE ET LE MANQUE DE DONNÉES

Au Canada, les projections en main-d'oeuvre se font sur une base régionale et locale. Le besoin d'information touchant la région étudiée est alors évident.

Ce besoin est double: a) un usage plus intensif de l'information existante ; b) le développement d'autres sources d'information. En plus, il y a une pénurie telle d'information au plan national et régional qu'il est urgent de rendre disponible une série de données additionnelles en créant des méthodes d'analyse pouvant être utilisées par les analystes régionaux dans l'établissement de leurs projections.

#### CONCLUSION

La qualité du facteur humain est donc importante pour la croissance économique en longue période des provinces maritimes et du Canada que l'application du capital et de la technologie.

De cette considération découle la nécessité de préparer des programmes de main-d'oeuvre régionaux basés sur une information tenue à jour.