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Atlantic Region Occasional Paper

Atlantic Region Industrial Parks: An Assessment of Economic Impact

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Atlantic Region Industrial Parks: An Assessment of Economic Impact

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OCCASIONAL PAPERS

From time to time, the Department of Regional Economic Expansion (DREE) publishes analytical research reports which have been undertaken in the course of the department's ongoing examination of socio-economic circumstances across the country.

These occasional papers will be of general interest to anyone concerned with the regional development process in general.

In presenting these research papers, it must be noted that, while prepared on behalf of the department, either through independent research or by staff resources, the reports are not intended to constitute or reflect the policies, objectives or opinions of the Government of Canada. Rather, they are meant to contribute to the level of general knowledge and discussion of the particular subject area which they undertake to examine.

FOREWORD

The federal government has, over the last decade or so, assisted in the establishment and expansion of a considerable number of industrial parks in the Atlantic Region. Yet, because of a general absence of data on industrial parks and their occupants, no serious analysis had been done on this federal investment in the region.

This study represents an initial step in assessing industrial parks' performances in the Atlantic Region. A data bank was mounted, and a first assessment was done. However, because the benefits to be derived from the establishment/expansion of an industrial park take time to be realized, and because many industrial parks have been operational for a short period of time, this initial assessment will have to be followed up by a re-assessment around 1981-82, so that a full five-year period of operation can be reviewed.

Nevertheless, this initial assessment is substantial and should contribute to a fuller understanding of the effectiveness of industrial parks.

The Department of Regional Economic Expansion
Atlantic Region
October 1979

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SUMMARY AND HIGHLIGHTS

As part of its regional development strategy, the federal government through the Department of Regional Economic Expansion has a policy to reduce regional disparities through job creation. Consistent with this policy, DREE has assisted in the creation and development of a number of industrial parks in the Atlantic Region.

The objective of this Industrial Parks Assessment was to establish a reliable data bank, to assess the impact and performance of the DREE-assisted industrial parks and to provide guidelines to assist in future decisions in industrial parks programming.

Some 45 industrial parks have been assisted through DREE and Atlantic Development Board programs in the Atlantic Region. Forty-three of these parks have been analyzed in this study. Together they have received a total of $31 million in assistance provided through Subsidiary Agreements, Special Areas, FRED, and ADB programs[1]. By province, Newfoundland has had five parks assisted with a federal investment of slightly over $3 million. Prince Edward Island received $3.2 million in assistance for three industrial parks. Nova Scotia had nine industrial parks assisted at a federal cost of $8.2 million, while New Brunswick had $16.5 million in assistance towards the development of 26 industrial parks.

(1) Subsidiary Agreements are signed under the General Development Agreements in New Brunswick, Nova Scotia and Newfoundland. Special Areas Program was a DREE program which focussed on growth centres, and existed from 1969 to 1973. FRED (Fund for Rural Economic Development) started in 1966, and was taken on by DREE; the P.E.I. Comprehensive Development Plan is a FRED agreement. ADB (Atlantic Development Board) is a pre-DREE program which funded a number of industrial parks in the Atlantic Region.

As part of the objective of this study, a data bank was established containing information on every firm located in these 43 industrial parks. Data was collected, through indirect sources, on the type of occupants, the employment, their previous location, their product market, principal mode of transportation, etc.

The major highlights of the study were as follows:

1. As of the end of December 1976, there were 769 operational firms located in the industrial parks generating 18,047 man-years of employment and resulting in an annual payroll of $178 million.
2. For the region as a whole, each occupied acre of land generates on the average 6.9 man-years of employment.
3. On the average, the parks are 6.7 years of age and contain 116 acres in size.
4. For the region as a whole, 8.7 acres of land are utilized, per year on average, for each park. This, however, varies considerably by park and by location.
5. The 43 industrial parks had about 5,000 acres of developed land of which some 2,600 acres were occupied, representing a utilization ratio of 52 per cent.
6. Assuming a policy to have a 5-year inventory of serviced land available, some 20 parks would fall below this reserve, if past trends were to continue.
7. By type of firm, 42 per cent were in trade, 26 per cent in manufacturing and processing, 11 per cent in transportation, communications, and utilities, 8 per cent in construction and 12 per cent in others.
8. It was demonstrated that industrial park occupants tend to be more diversified in their production than the Atlantic Region average. More high-value production is found in the parks than on the average for the region.
9. Based on the previous location of firms, it was estimated that 68 per cent of all firms in industrial parks represented incremental activity to the region. This resulted in an estimated incremental employment of 75 per cent of the man-years of employment found in the parks.
10. Some 89 per cent of all firms in these parks had as their major markets either the province in which they were established or the Atlantic Region. Roads were considered the

major mode of transportation for 95 per cent of all firms for which transportation was applicable.

11. On the average, there were 375 acres of serviced industrial land sold per year in the Atlantic Region. Assuming a continuation of historical trends, a land bank exists to handle a demand for the next six years on a broad regional basis.
12. It was estimated that employees working in industrial parks paid $26.6 million of federal and provincial income taxes in 1976.
13. It was shown that larger communities tend to have bigger parks, with more occupants and employment than smaller communities.
14. Larger communities also had more expensive parks, both on a per park and per acre basis, reflecting a higher level of services and a higher cost of urban land.

PREFACE

The purpose of the Atlantic Region Industrial Parks Assessment is to determine the impact that the Department of Regional Economic Expansion assisted industrial parks[1] have on the economy of Newfoundland, Nova Scotia, Prince Edward Island and New Brunswick, as measured by the number of new firms established, the employment created and the payrolls which resulted. In making the assessment, a complete inventory of all DREE assisted parks was made, together with pertinent information on the occupants of the parks.

It soon became evident that assessing a dynamic activity is difficult at best. In fact, the inventory is basically a snap-shot of a given park at a given time. Parks continue to change over time as services are added and as firms move in and out as their needs dictate. Firms also change as expansions or reductions of activities, closures, lay-offs and hirings take place.

As a result, while the inventory from which the analysis was made may have been accurate at the time it was done, it quickly gets "dated" as changes take place.

Despite the fact that the detailed data by park and firm is likely to have changed slightly from the date it was collected, this does not negate the basic findings of the study.

(1) A "DREE assisted industrial park" is an industrial park which has received some funding from DREE (including ADB) for the establishment, expansion or servicing of industrial land, when such land is referred to as an "Industrial Park". The funding must have been received by March 31, 1977, and the park must have been operational by the end of December, 1976.

PART I

INTRODUCTION

BACKGROUND

Since its inception in 1969, a component of DREE industrial development policy has been to assist in the establishment of Industrial Parks in the Atlantic Region. This policy was consistent with the federal government's objective of reducing regional disparities through job creation, especially in the manufacturing and processing sectors. Industrial parks were considered as an essential infrastructure toward the attainment of the employment creation objective.

Industrial Parks infrastructure has a peculiar nature in that its absence can cause a bottleneck that impedes industrialization, but its presence does not by itself assure success in attracting industries to locate in that given location.

Over a seven year period,[1] DREE assisted some 45 industrial parks[2] in the Atlantic Region, at a public cost of some $36 million in contributions and some $18 million in loans. This financial assistance was provided through a number of programs, mainly ADB, Special Areas, FRED and Subsidiary Agreements

(1) A large part of the ADB funding of close to $8 million was completed before DREE's inception.
(2) In fact, two parks were excluded from the study (see page 1), and the 43 parks kept for the study had some $31 million in contributions.

to the General Development Agreements (G.D.A.'s). The funding arrangements were different for each of these programs and in some cases also different by province, partly a result of different agreements in existence in these provinces, and partly as a result of different priorities, and development strategies, as embodied in the General Development Agreements.

Numerous park related activities were carried out over the past seven years in a somewhat different fashion in each of the four Atlantic Provinces. Subsidiary agreements with New Brunswick, Nova Scotia and Newfoundland and the Comprehensive Development Plan in P.E.I. provide for further industrial park activities. It is intended that this analysis of past performance coupled with knowledge of future needs will provide better policy directions for future investments.

OBJECTIVE

It is against the above background that a region-wide and comprehensive assessment of DREE industrial park programming in the Atlantic Region was initiated. The objectives of the assessment were set:

(a) to establish a reliable data bank; and

(b) to assess the impact of DREE's industrial parks programming in terms of meeting the department's job creation and increased incomes objectives.

It was anticipated that a number of interesting by-products would also be derived from the study. The assessment and analysis of all the information should provide guidelines in determining the kind, size and locations of industrial parks required, park promotion and administration practices in use and should lead to a subsequent improvement in the overall industrial park assistance policy and its delivery. It was anticipated that the study would indicate both the areas of future needs and areas of saturation.

A THEORETICAL FRAMEWORK

Infrastructure facilities have been recognized by DREE as an essential element of regional development. Infrastructure usually refers to a facility which is not directly productive, and as a rule is utilized or purchased by many consumers. By nature, infrastructure is usually bulky, large and costly. Because of these characteristics, government intervention is usually required in their provision. Economic infrastructure refers to those items which work in direct support of directly productive activities.

Regional development literature recognizes that while the absence of infrastructure can inhibit growth, the provision of such infrastructure does not in itself assure that the directly productive activities will automatically follow. This observation is valid for both social and economic infrastructure. Industrial parks are considered as economic infrastructure, as they are not directly productive, tend to serve a great number of consumers (firms), and are bulky and costly. Their mere existence does not necessarily guarantee that firms will establish in the parks, but their absence is considered a serious deterrent to industrialization.

Industrial parks, properly planned and strategically located, provide benefits to the firms, the municipality and its people. An industrial park permits a firm to locate in a proper industrial environment with the provision of required services, at reasonable cost (as these are shared among many users) with minimum time lag. An industrial park location will meet the environmental requirements, and thus avoid the possible conflicts and problems arising out of establishing in proximity to or in a residential district.

The municipality or group of municipalities, besides reaping the benefits of an enlarged tax base, will have the advantage of better land use planning, thus protecting the environment and safeguarding residential districts. It will also permit the provision of industrial services, such as roads, water and sewage at less cost.

The residents of the municipality will first benefit from the environmental protection mentioned above, and will have in a concentrated milieu the availability of employment. Inasmuch as the industrial park is properly designed and constructed, it

should serve as an incentive to attract firms (with employment and payrolls) to the municipality.

An important question raised, especially with reference to underdeveloped economies, is whether the infrastructure should be put in first in order to achieve a more balanced growth[1]. In fact, infrastructure building usually produces excess capacity because it is "bulky", which can act as a strong incentive to subsequent growth. The proponents of unbalanced growth[2], however, believe that the importance of infrastructure has been exaggerated, mainly because investment criteria are most difficult to apply to infrastructure investment, and thus represents an attractive alternative to developers who cannot be proven wrong. As infrastructure is generally the responsibility of government(s), developers do not have the problem of dealing with the private market criteria, as they control the factors they are deploying, and can thus over-invest.

As infrastructure represents some faith in the development potential of a country or region, it cannot be expected that the private sector will lead in such regions; the public sector will have to take the lead. While doing so, the government must realize that over-investment in infrastructure on the other hand may, along with financial losses, also result in vast under-utilization of such infrastructure leading to depressed attitudes of "nothing is happening".

Ideally, only the required infrastructure is put in place, with a minimum of excess capacity so that subsequent growth sets up tensions and pressures which will give clear signals and induce or compel both the state and the private sector to take further investment decisions.

The federal regional development policy is particularly concerned with the areas most affected by economic disparities, since these areas most frequently have infrastructure below the Canadian standard. In many cases, the level of existing infrastructure is clearly deficient, especially in relation to competing regions. In order to curtail over-investment in infrastructure, criteria or standards have been developed where projects which are clearly development related are ranked higher in priority than projects

(1) Ragnar Nurkse, "Problems of Capital Formation in Underdeveloped Countries"; London; Oxford University Press, 1958.
(2) Albert O. Hirschman, "The Strategy of Economic Development"; New Haven, Yale University Press, 1958.

which are only marginally related to development and consequently are treated differently. Thus using these standards, social infrastructure, such as schools and hospitals, has a lower priority rating than economic infrastructure.

Once development has occurred in a given region, the resulting demand will bring about the required pressures to have the social infrastructure. On the other hand, the development-related infrastructure is regarded as an essential part of the development process and, in some cases, is put in place to act as a catalyst to development. Industrial Parks fall in this last category, and a limited number of serviced industrial parks should be available in strategic locations.

While it is recognized that industrial parks are directly supportive of productive employment, and are development related, it must also be recognized that industrial parks do not, as a rule, play a major role in attracting a firm to a given location. In fact, very few industries, if any, are created because of the existence of an industrial park. The entrepreneur decision-making process will start with an identified market potential, the identification of the product to be manufactured or service to be rendered and the financing of the project. Once these decisions are made, the general location will be looked at by considering available transportation, labour force, wage rates, industrial relations, and general attractiveness of the region. It is usually only after the region has been selected that a precise industrial location is sought. The absence of an industrial park could at this stage deter the entrepreneur and cause him to look at other areas, thus the need for strategically located parks. The availability of the park should assist him in choosing the final site for the industry. At this stage, the entrepreneur will usually look for a site which will permit him to capitalize on the availability of the transportation system, safeguard his capital investment, minimize his cost, reduce the time-lag for obtaining land ownership, and assure him the availability of essential services such as power, water and sewage. A properly designed and managed industrial park should offer all these locational factors, and to this extent, is an important development tool.

Inasmuch as an industrial park is a development tool, it also plays an important role in urban and regional land use planning, and as an income generator for municipalities.

PART II

IMPACT AND PERFORMANCE OF INDUSTRIAL PARKS

The first step in the study was to establish a comprehensive data bank. The data was collected by DREE staff, from knowledgeable people (such as industrial commissioners) in this sphere of activity.

This section of the study provides the general characteristics of the DREE-assisted parks and the analysis of the data.

SECTION I

GENERAL CHARACTERISTICS OF PARKS AND OCCUPANTS

DREE INDUSTRIAL PARK EXPENDITURES

Various programs have served to provide financial assistance to the region's industrial parks. In total, some $31 million has been provided in grants while some $17.6 million has been provided in loans. Table 1 provides by park the amount of assistance in the form of grants, together with the programs involved. Table 2 provides by park the amount of loans. These figures exclude commitments made, but not yet spent. Only the federal share of expenditures are shown, and utilized in this study.

The total ADB expenditures approved from 1965 on were $7.9 million in the form of contributions.

Only Prince Edward Island and New Brunswick had FRED agreements. The Prince Edward Island FRED plan provided industrial park assistance in that province, for a total of $3 million. In New Brunswick, the Northeast and Mactaquac FRED Agreements provided some $1.3 million in assistance, for two parks in Northeast New Brunswick and one in Nackawic. These funds were provided on a cost-shared basis with the provinces involved, while the municipalities would also provide a smaller contribution. Only the federal shares are being utilized in this study.

TABLE 1

DREE'S CONTRIBUTIONS [1] IN INDUSTRIAL PARKS ATLANTIC REGION

— as of March 31, 1977 —

PARK NAME	ADB	FRED	SPECIAL AREAS	GDA	TOTAL
NEWFOUNDLAND					
Donovan's (St. John's)	—	—	1,933,716	—	1,933,716
Grand Falls	—	—	354,066	—	354,066
Carbonear	—	—	231,101	—	231,101
Maple Valley (Cor. Brook)	—	—	223,773	—	223,773
Gander	—	—	319,510	—	319,510
TOTAL	—	—	$3,062,166	—	$3,062,166
PRINCE EDWARD ISLAND					
Parkdale (Charlottetown)	—	4,367	—	—	4,367
West Royalty (Charlottetown)	—	2,403,259	—	—	2,403,259
St. Eleanors (Summerside)	137,151	650,329	—	—	787,480
TOTAL	$137,151	$3,057,955	—	—	$3,195,106
NOVA SCOTIA					
Point Edward	1,183,878	—	—	—	1,183,878
Stellarton	715,000	—	—	—	715,000
Lakeside (Halifax)	485,135	—	—	—	485,135
Amherst	350,000	—	—	221,136	571,136
Truro	181,000	—	—	—	181,000
Burnside (Dartmouth)	787,500	—	3,811,741	—	4,599,241
Port Hawkesbury	248,250	—	—	—	248,250
Bridgewater	185,000	—	—	—	185,000
Debert	—	—	—	116,290	116,290
TOTAL	$4,135,763	—	$3,811,741	$337,426	$8,284,930
NEW BRUNSWICK					
MID (Moncton)	400,000	—	1,211,793	—	1,611,793
Scoudouc (Moncton)	—	—	—	77,500	77,500
Dieppe (Moncton)	—	—	512,262	1,167,141	1,679,403
Caledonia (Moncton)	—	—	918,334	1,154,914	2,073,248
Dorchester Cape (Moncton)	1,500,000	—	—	—	1,500,000
McAllister (Saint John)	—	—	607,588	552,509	1,160,097
Spruce Lake (Saint John)	—	—	2,920,432	100,746	3,021,178
Grandview (Saint John)	450,000	—	—	—	450,000
Sussex	327,662	—	—	97,578	425,240
Champlain (St. Andrews)	100,000	—	—	—	100,000
Fredericton	387,142	—	—	131,527	518,669
Oromocto East	—	—	—	29,730	29,730
Nackawic	—	415,625	—	9,121	424,746
Clair	123,750	—	—	150,059	273,809

(1) "Contribution" means that non-refundable sum provided toward the purchase of land and installation of services, as opposed to loan.

PARK NAME	ADB	FRED	SPECIAL AREAS	GDA	TOTAL
NEW BRUNSWICK (Continued)					
St. Hilaire (Edmundston)	—	—	—	217,472	217,472
Grand Falls	—	—	—	347,019	347,019
St. Leonard	—	—	—	12,350	12,350
Woodstock	274,906	—	—	4,113	279,019
Hartland	125,000	—	—	—	125,000
Forestry-Bathurst	—	—	—	1,135,782	1,135,782
Caraquet	—	683,343	—	—	683,343
Shippegan	—	—	—	20,907	20,907
Newcastle	—	—	—	8,822	8,822
Chatham	—	—	—	8,822	8,822
Bathurst	—	268,002	—	10,080	278,102
Petit Rocher	—	—	—	54,696	54,696
TOTAL	$3,688,460	$1,366,990	$6,170,409	$5,290,888	$16,516,747
ATLANTIC REGION	$7,961,374	$4,424,945	$13,044,316	$5,628,314	$31,058,949

TABLE 2

DREE'S LOANS ON INDUSTRIAL PARKS — FROM SPECIAL AREAS AGREEMENTS —

PARK NAME	LOANS
NEWFOUNDLAND	
Donovan's (St. John's)	2,161,249
Grand Falls	354,066
Carbonear	314,724
Maple Valley (Corner Brook)	540,211
Gander	319,510
TOTAL	$3,689,760
NOVA SCOTIA	
Burnside (Dartmouth)	5,393,569
TOTAL	$5,393,569
NEW BRUNSWICK	
MID (Moncton)	2,511,793
Dieppe (Moncton)	583,218
Caledonia (Moncton)	2,136,770
McAllister (Saint John)	914,603
Spruce Lake (Saint John)	2,421,064
TOTAL	$8,567,448
ATLANTIC REGION	
TOTAL	$17,650,777

The Special Areas Agreements provided both grants and loans for industrial parks located in special areas, as jointly agreed with the provinces. In Nova Scotia, Halifax and the Strait of Canso were designated, while it was Saint John and Moncton in New Brunswick. In Newfoundland, St. John's (and Carbonear), Grand Falls, Corner Brook and Gander were designated as special areas. At the regional level, $13 million was provided in contributions and over $17 million in loans.

The current General Development Agreements provide the assistance in Nova Scotia and New Brunswick at 80/20 cost-sharing. The assistance is in the form of grants. Up to March 31, 1977, $337,426 was spent in Nova Scotia in industrial parks while over $5 million was spent in 20 parks in New Brunswick. No GDA expenditures were made as of the end of March, 1977 in Newfoundland.

INDUSTRIAL PARKS LOCATIONS AND DESCRIPTIONS

The initial research associated with the study was concentrated on determining the number of industrial parks which had received DREE funding. Since the term "industrial park" is not very precise, it was necessary to operationalize it in order to select the parks that were to be part of the study.

Proceeding by elimination, it was decided not to include single-industry sites i.e. an existing firm which received infrastructural assistance to remove water pollution problems. Also excluded were groups of existing industries which received assistance for a common service such as water supply. However, this process did not eliminate industrial parks which might have only one industry (or none) at the time of the study.

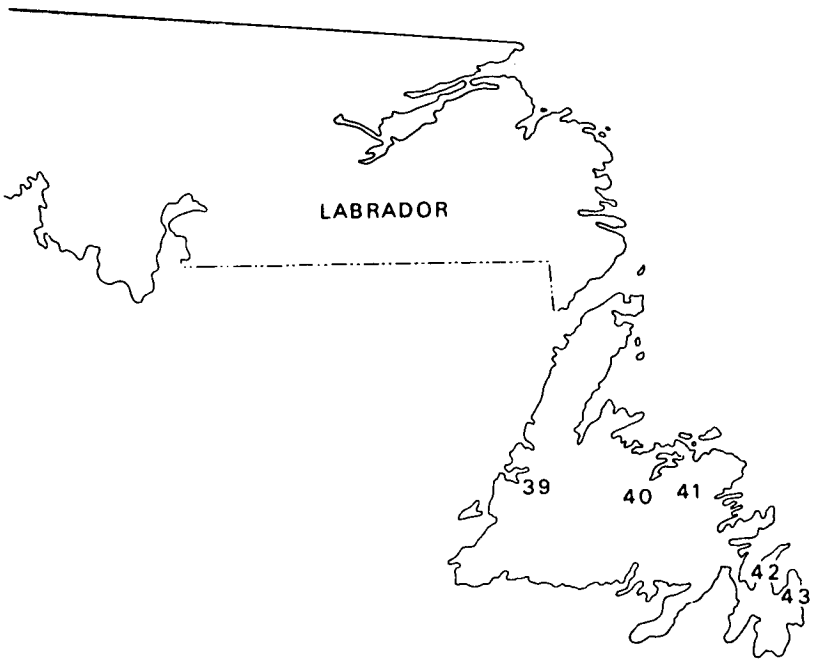
In order to be retained as an industrial park in the

study, the industrial "area" had to be called a park, and must have received funding (expenditures rather than commitments) from DREE. Only the parks which were in operation by December 31, 1976 were retained.

In all, 45 industrial parks made the initial list. It was however decided to remove the Point Tupper Heavy Industrial Park and the Lorneville Industrial Park from the study because their very large sizes in acreage caused a distortion in the averages of the other 43. Maps I and II show the locations of all the parks, including those that were excluded either because of their special nature or because they were not in operation by December 31, 1976.

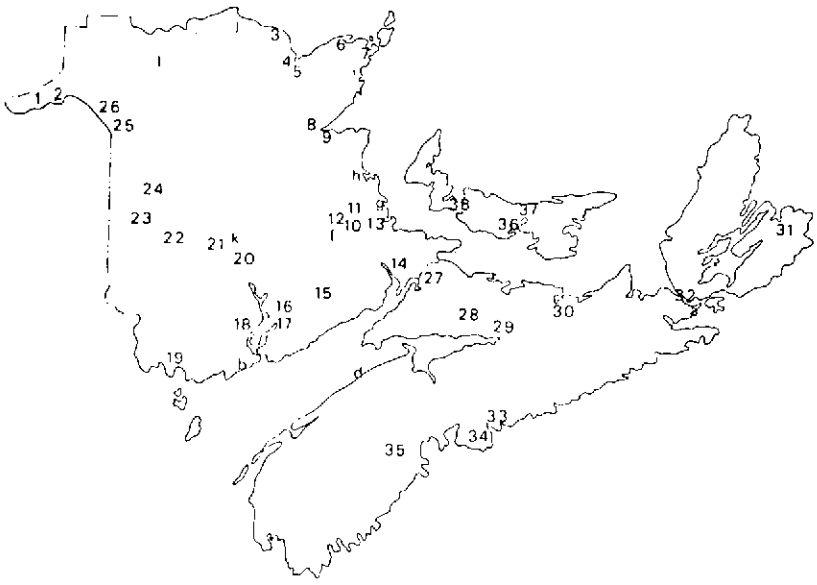
The maps are followed by a listing of the 43 industrial parks, with their major attributes in terms of industrial services.

Province of Newfoundland



39. Maple Valley
40. Grand Falls
41. Gander
42. Carbonear
43. Donovan

Maritime Provinces



1. Clair
2. Saint Hilaire
3. Petit Rocher
4. Bathurst
5. Forestry-Bathurst
6. Caraquet
7. Shippegan
8. Newcastle
9. Chatham
10. Dieppe
11. Caledonia - Moncton
12. Moncton - M.I.D.
13. Scoudouc
14. Dorchester Cape
15. Sussex
16. Grandview - Saint John
17. McAllister - Saint John
18. Spruce Lake — Saint John
19. Champlain - St. Andrews
20. Oromocto East
21. Fredericton
22. Nackawic
23. Woodstock
24. Hartland
25. Grand Falls
26. St. Leonard
27. Amherst
28. Debert
29. Truro
30. Stellarton
31. Point Edward - Sydney
32. Port Hawkesbury
33. Burnside - Dartmouth
34. Lakeside - Halifax
35. Bridgewater
36. St. Eleanors - Summerside
37. West Royalty - Charlottetown
38. Parkdale - Charlottetown

ATLANTIC REGION INDUSTRIAL PARKS
LEVEL OF SERVICES AND OWNERSHIP STATUS

Park No.	Park Name	Location	Industrial Services						Special Service	Owned and Administered By	Promoted By	Serviced Acreage
			Rails	Water	Sewage	Paved Roads	High Voltage Power	Fire Hydrant				
1	Clair Industrial Park	Northwest, N.B.	Yes	Yes	Yes	No	Yes	Yes	—	Northwest N.B. Ind. Commission	Same	50
2	St. Hilaire Ind. Park	Northwest, N.B.	No	No	No	No	No	No	—	Northwest N.B. Ind. Commission	Same	0
3	Petit Rocher Ind. Park	Northeast, N.B.	Yes	No	No	Yes	Yes	No	—	Chaleur Region Ind. Commission	Same	12
4	Bathurst Ind. Park	Northeast, N.B.	Yes	Yes	Yes	No	Yes	Yes	—	Chaleur Region Ind. Commission	Same	52
5	Forestry-Bathurst Ind Park	Northeast, N.B.	No	Yes	Yes	No	Yes	Yes	—	Province of N.B.	Ind. Com. & Province	200
6	Caraquet Ind. Park	Northeast, N.B.	No	Yes	Yes	Yes	Yes	Yes	—	Econ. Expansion Com. of the Peninsula Inc.	Same	66
7	Shippegan Ind. Park	Northeast, N.B.	No	Yes	Yes	No	Yes	Yes	—	Econ. Expansion Com. of the Peninsula Inc.	Same	17.5
8	Newcastle Ind. Park *	Northeast, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	*Connected to wharf by rail	Miramichi Ind. Commission	Same	50
9	Chatham Ind. Park *	Northeast, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	Close to Airport	Miramichi Ind. Commission	Same	50
10	Dieppe Ind. Park	Southeast, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	Airport	Town of Dieppe	Dieppe Ind. Com.	300
11	Caledonia Ind. Park (Moncton)	Southeast, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	—	City of Moncton	M.I.D.	57.5
12	M.I.D. Ind. Park (Moncton)	Southeast, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	—	City of Moncton	M.I.D.	600
13	Scoudouc Ind. Park	Southeast, N.B.	No	Yes	Yes	Yes	Yes		—	Province of N.B.	M.I.D.	200
14	Dorchester Cape Ind. Park	Southeast, N.B.	Yes	Yes	Yes	No	Yes	Yes	—	Province of N.B.	M.I.D.	234
15	Sussex Ind. Park	Southwest, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	—	Town of Sussex	Same	66.4
16	Grandview Ind. Park (Saint John)	Southwest, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	Near year-round harbour — connected by rail	City of Saint John	Ind. Commission	100
17	McAllister Ind. Park (Saint John)	Southwest, N.B.	Yes	Yes	Yes	Yes	Yes	Yes		City of Saint John	Ind. Commission	70
18	Spruce Lake Ind. Park (Saint John)	Southwest, N.B.	No	Yes	Yes	Yes	Yes	Yes		City of Saint John	Ind. Commission	235
19	Champlain Ind. Park (St. Andrews)	Southwest, N.B.	Yes-1978	Yes	Yes	Yes	Yes	No	DPW Wharf	Province of N.B.	Same	70
20	Oromocto East Ind. Park	Central, N.B.	Adjacent	Yes	Yes	No	Yes	Yes				40
21	Fredericton Ind. Park	Central, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	—	City of Fredericton	Ind. Commission	200
22	Nackawic Ind. Park	Central, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	—	City of Fredericton	Ind. Commission	200
23	Woodstock Ind. Park	Northwest, N.B.	Yes	Yes	Yes	Yes	Yes	Yes	—	Town	Town	100
24	Hartland Ind. Park	Northwest, N.B.	No	Yes	Yes	Yes	Yes	Yes	—	Town	Town	12
25	Grand Falls Ind. Park	Northwest, N.B.	Yes	Yes	Yes	No	Yes	Yes	—	Grand Falls Ind. Commission	Same	63
26	St. Leonard Ind. Park	Northwest, N.B.	No	No	No	No	Yes	No	—	Grand Falls Ind. Commission	Same	25
27	Amherst Ind. Park	Northeast, N.S.	Yes	Yes	Yes	Yes	Yes	Yes	—	Amherst Ind. Commission	Same	295
28	Debert Air Ind. Park	Northeast, N.S.	Yes	Yes	Yes	Yes	Yes	Yes	Airport	Industrial Estate Ltd.	Same	300
29	Truro Ind. Park	Northeast, N.S.	Yes	Yes	Yes	Yes	Yes	Yes	—	Truro Ind. Commission	Same	105
30	Stellarton Ind. Park	Northeast, N.S.	Yes	Yes	Yes	Yes	Yes	Yes	—	Industrial Estate Ltd.	Same	67
31	Point Edward Ind. Park (Sydney)	Cape Breton Region	Yes	Yes	Yes	Yes	Yes	Yes	Port	Cape Breton Dev. Corporation	Same	250
32	Port Hawkesbury Light Ind. Park	Cape Breton Region	No	Yes	Yes	Yes	Yes	Yes	—	Town of Port Hawkesbury	Same	68
33	Burnside Ind. Park	Halifax Region	Yes	Yes	Yes	Yes	Yes	Yes	—	City of Dartmouth	Same	415
34	Lakeside Ind. Park	Halifax Region	Yes	Yes	Yes	Yes	Yes	Yes	—	Halifax County Ind. Commission	Same	71
35	Bridgewater Ind. Park	Southern, N.S.	Yes	Yes	Yes	Yes	Yes	Yes	—	Bridgewater Ind. Commission	Same	97
36	St. Eleanor's Ind. Park (Summerside)	P.E.I.	No	Yes	Yes	Yes	Yes	Yes	—	Industrial Enterprise Inc.	Same	20
37	West Royalty Ind. Park (Charlottetown)	P.E.I.	No	Yes	Yes	Yes	Yes	Yes	—	Industrial Enterprise Inc.	Same	40
38	Parkdale Ind. Park (Charlottetown)	P.E.I.	No	Yes	Yes	Yes	Yes	Yes	—	Industrial Enterprise Inc.	Same	26
39	Maple Valley Ind. Park (Corner Brook)	Western, Nfld.	No	Yes	Yes	Yes	Yes	Yes	—	Nfld. & Labrador Housing Corp.	Dept. of Ind. Dev.	35
40	Grand Falls Ind. Park	Northern, Nfld.	Yes	Yes	Yes	Yes	Yes	Yes	—	Nfld. & Labrador Housing Corp.	Dept. of Ind. Dev.	60
41	Gander Ind. Park	Northern, Nfld.	Yes	Yes	Yes	Yes	Yes	Yes	—	Nfld. & Labrador Housing Corp.	Dept. of Ind. Dev.	17.5
42	Carbonear Ind. Park	Avalon Peninsula	No	Yes	Yes	Yes	Yes	Yes	—	Nfld. & Labrador Housing Corp.	Dept. of Ind. Dev.	14.5
43	Donovan's Ind. Park (St. John's)	Avalon Peninsula	Yes	Yes	Yes	Yes	Yes	Yes	T-C Highway	Nfld. & Labrador Housing Corp.	Dept. of Ind. Dev.	210

PARKS EXCLUDED FROM THE STUDY

(a) Parks with special features

Lorneville industrial park in Saint John, N.B. and Point Tupper Heavy Industrial Park in the Strait of Canso area of N.S., two additional DREE-assisted parks, were both excluded from the analysis for reasons of size. The two parks together contain 12,000 acres of developed industrial park land and since all 43 of the DREE-funded parks studied together constitute only about 5,000 developed acres, the inclusion of these two unusually large parks would have dominated and, therefore, to a great extent influenced the results of much of the analysis.

Point Tupper Heavy Industrial Park (shown as (a) in map) was established in 1961 and contains about 4,500 developed acres of park land, 3,200 (71 per cent) of which are occupied. There were five occupants in the park as of December 31, 1976, all new firms, and their total full-time employment was about 1,350. The average age of these five firms was about 10 years. DREE contributed $840,000 under the Special Areas Agreement and an additional $3.6 million was spent by ADB.

The Lorneville park, (shown as (b) in map) was established in 1972, and consists of 7,200 developed acres, 800 of which (11 per cent) were occupied as of December 31, 1976. The only occupant of the park is the Colson Cove Power Plant, a new thermal generation station, employing about 160 full-time personnel. The 800 acres of park land is devoted primarily to oil storage. DREE contributed close to $2 million under an industrial sub-agreement to the development of the Lorneville park.

(b) Parks excluded because government expenditures, while committed, were not incurred:

(i) Minto Industrial Park (New Brunswick) ("c" in map)

(ii) Kentville Industrial Park (Nova Scotia) ("d" in map)

(c) Parks excluded because they were not operational:

(i) Wabush Industrial Park (Newfoundland) ("e" in map)

(ii) Riverview Industrial Park (New Brunswick) ("f" in map)
(iii) Buctouche Industrial Park (New Brunswick) ("g" in map)
(iv) Richibucto Industrial Park (New Brunswick) ("h" in map)
(v) Tracadie Industrial Park (New Brunswick) ("i" in map)
(vi) Eel River Industrial Park (New Brunswick) ("j" in map)
(vii) Nashwaaksis Industrial Park (New Brunswick) ("k" in map)
(viii) Kedgewick Industrial Park (New Brunswick) ("l" in map)

Also excluded were any Industrial Parks which were not funded by DREE and ADB.

GENERAL CHARACTERISTICS — A SUMMARY

A vast amount of data was collected at the industrial park and firm levels. Table 3 provides a summary of what was considered to be the most relevant information contained in these appendices.

Basically, the table shows that at the regional level, the 43 parks are 6.7 years of age on the average, contain 5,007 developed acres of land of which 2,609 acres are being utilized, a utilization ratio of 52 per cent. In these parks, some 769 firms have been identified, generating a total (man-years) employment of 18,047. The DREE expenditures (including ADB, but excluding loans) for infrastructure assistance to the 43 parks totalled $31 million. The estimated 1976 payroll of the 769 firms was $178,100,000.

SECTION II — A

ANALYSIS OF PARKS AND OCCUPANTS

An abundance of data on the parks and occupants enabled testing of a large number of correlation possibilities.

TABLE 3

INDUSTRIAL PARKS — GENERAL CHARACTERISTICS

Park Name	No. of Parks	Year Est.	Age	Dev. Acre	Occ. Acre	% Util. Ratio	No. of Firms	Employ-ment	Total DREE Expend. for Infrastruct. ($K)	1976 Total Payroll $M
NEWFOUNDLAND										
Donovan's (St. John's)		1972	4.5	210	103	49	36	706	1,933.7	7.3
Grand Falls		1974	2.5	60	22.8	38	6	100	354.1	1.1
Carbonear		1975	1.5	14.5	0	0	0	0	231.1	0
Maple Valley (Corner Brook)		1973	3.5	35.5	21.6	61	13	160	223.8	1.9
Gander		1975	1.5	17.5	.6	3	1	3	319.5	....
TOTAL	5		2.7*	337.5	148.0	44	56	969	3,062.2	10.3
PRINCE EDWARD ISLAND										
Parkdale (Charlottetown)		1970	6.5	26	20.3	78	5	114	4.4	1.0
West Royalty (Charlottetown)		1975	1.5	40	6	15	16	198	2,403.3	1.8
St. Eleanors (Summerside)		1975	1.5	20	16	80	2	113	787.5	1.0
TOTAL	3		3.2*	86	42.3	49	23	425	3,195.2	3.8
NOVA SCOTIA										
Point Edward (Sydney)		1969	7.5	250	225	90	26	387	1,183.9	4.4
Stellarton		1969	7.5	67	8	12	2	75	715.0	.9
Lakeside (Halifax)		1964	12.5	71	62	87	12	414	485.1	4.1
Burnside (Dartmouth)		1961	15.5	415	281	68	222	3,025	4,599.2	30.0
Amherst		1964	12.5	295	128	43	20	1,045	571.1	10.1
Truro		1962	14.5	105	103	98	18	1,055	181.0	9.0
Debert (Truro)		1970	6.5	300	72	24	11	400	116.3	3.4
Port Hawkesbury		1968	8.5	68	30	44	20	152	248.3	1.5
Bridgewater		1965	11.5	97	52	54	3	1,204	185.0	12.1
TOTAL	9		10.7	1,668	961	58	334	7,757	8,284.9	75.5

TABLE 3 (Con't)
INDUSTRIAL PARKS — GENERAL CHARACTERISTICS

Park Name	No. of Parks	Year Est.	Age	Dev. Acre	Occ. Acre	% Util. Ratio	No. of Firms	Employ. ment	Total DREE Expend. for Infrastruct. ($K)	1976 Total Payroll $M
NEW BRUNSWICK										
MID (Moncton)		1960	16.5	600	432	72	121	2,569	1,611.8	24.7
Scoudouc (Moncton)		1967	9.5	200	150	75	8	857	77.5	8.3
Dieppe (Moncton)		1974	2.5	300	187.4	62	29	423	1,679.4	4.1
Caledonia (Moncton)		1972	4.5	57.5	43	75	14	318	2,073.2	3.1
Dorchester Cape (Moncton)		1966	10.5	234	15	6	1	40	1,500.0	.4
McAllister (Saint John)		1973	3.5	70	11.1	16	3	215	1,160.1	2.4
Spruce Lake (Saint John)		1973	3.5	235	18.5	8	8	184	3,021.2	2.1
Grandview (Saint John)		1968	8.5	100	96.2	96	29	561	450.0	6.3
Sussex		1964	12.5	66.4	56.1	84	12	296	425.2	3.1
Champlain (St. Andrews)		1969	7.5	70	18	26	2	410	100.0	4.6
Fredericton		1959	17.5	200	185	93	59	1,534	518.7	14.4
Oromocto East		1975	1.5	40	14	35	3	88	29.7	.8
Nackawic		1970	6.5	45	30	67	13	669	424.7	6.3
Clair		1969	7.5	50	34	68	4	78	273.8	.8
St. Hiliare (Edmundston)		1976	.5	0	0	0	0	0	217.5	.0
Grand Falls		1972	4.5	63	16.1	26	3	59	347.0	.6
St. Leonard		1975	1.5	25	6	24	1	8	12.4	....
Woodstock		1967	9.5	100	41	41	7	87	279.0	.9
Hartland		1960	16.5	12	10	83	6	39	125.0	.4
Forestry-Bathurst		1974	2.5	200	30	15	1	120	1,135.8	1.4
Bathurst		1972	4.5	52	13.6	26	7	95	278.1	1.1
Petit-Rocher		1976	.5	12	1	8	1	9	54.7	.1
Caraquet		1973	3.5	66	2	3	1	6	683.3	....
Shippegan		1975	1.5	17.5	11	63	1	35	20.9	.4
Newcastle		1971	5.5	50	21	42	17	157	8.8	1.7
Chatham		1972	4.5	50	16	32	5	39	8.8	.4
TOTAL	26		6.4*	2,915.4	1,458	50	356	8,896	16,516.7	88.5
TOTAL — REGION	43		6.7*	5,006.9	2,609.3	52	769	18,047	31,059.0	178.1

Notes: * Average age
.... under $100,000

These tests[1] were done through cross-sectional analysis and through trend observations.

PARK SIZE AND AGE

This section of the study focuses on an analysis of the relationship between park size in terms of developed acreage and the average age of parks. The age is derived from the establishment date; the year of establishment is deemed to represent a half year of operation. The establishment date is not always clear, as some parks gradually came into being, starting with a few firms, and at some stage, being designated as an industrial park, with government assistance coming still later. In such cases, the year of official designation as an "industrial park" is deemed to be the establishment date.

The size of parks is determined by the number of developed acres, or acreage considered ready for occupancy. This acreage figure is not always easy to determine, as some parks have large acreages with different levels of services; it becomes necessary to decide what acreage should be considered "developed" industrial land. Industrial parks have different levels of services, some in fact have nothing more than a road leading to them while others have rail, water, electricity, sewers and paved roads.

The 43 DREE-funded industrial parks in the Atlantic Region averaged 6.7 years of age and 116 developed acres in size.

The average age of parks in Newfoundland was 2.7 years while park size averaged 68 developed acres. All five DREE-funded parks in Newfoundland were less than five years old and only one park was over 60 acres in size. In the case of P.E.I., all three parks were established in the 1970's, and the average park was 3.2 years of age and contained 29 acres. The maximum size park on the Island was 40 developed acres. Hence, in Newfoundland and P.E.I., all eight parks were established in the 1970's and, with the exception of one park which exceeded 60 acres, were small in size.

(1) Many of the tests proved inconclusive, and were discarded.

Parks in New Brunswick averaged 6.4 years of age and 112 developed acres in size. Twelve or almost half of the 26 New Brunswick parks were established more than five years ago and their average size was 144 developed acres; the remaining 14 parks were opened in the last five years and their average size was 85 acres. In the case of Nova Scotia, parks averaged nearly 11 years of age, almost twice the age of New Brunswick parks. Their average size was 185 acres.

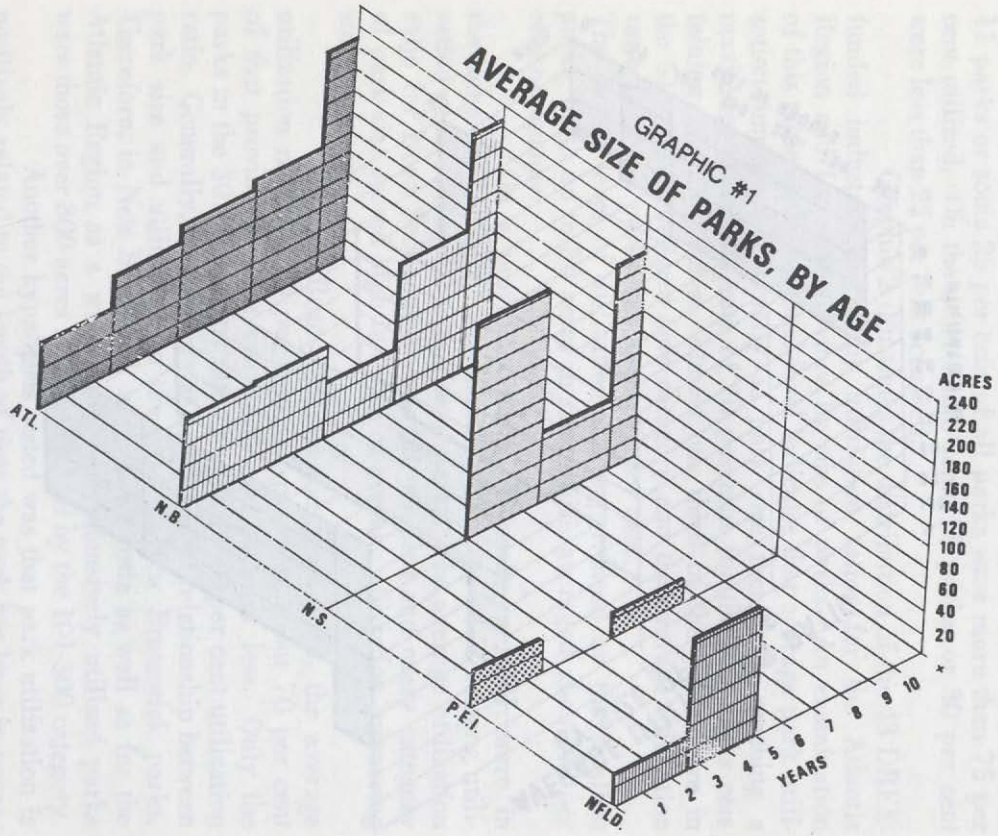
Graphic 1 indicates the average size of industrial parks, by age. No relationship can be established between age and size in P.E.I. and N.S. The Newfoundland parks all fall in the first two age groups, not providing sufficient data for any trend. New Brunswick shows a fairly stable relationship between age and size, except for the parks aged 5.1 to 7.5 years of age.

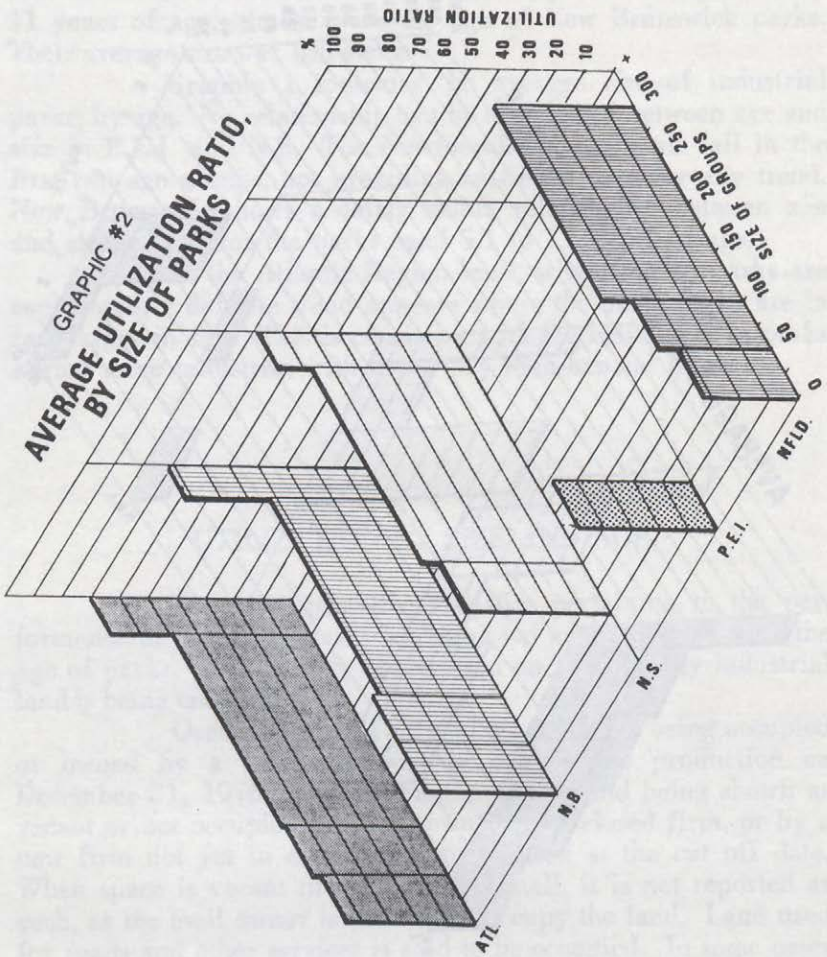
At the Atlantic Region level, where the 43 parks are considered, a definite trend appears where the older parks are in fact larger in size. This is consistent with the belief that as parks attract more industries with time, they then expand in size.

UTILIZATION BY SIZE AND AGE

The most revealing statistics pertaining to the performance of industrial parks are occupied acres in relation to the age of parks. This permits observation on how rapidly industrial land is being taken up.

Occupied land is defined, as a rule, as being occupied or owned by a firm that was in commercial production on December 31, 1976. This means that some land being shown as vacant or not occupied could be owned by a closed firm, or by a new firm not yet in commercial production at the cut off date. When space is vacant in an industrial mall, it is not reported as such, as the mall owner is deemed to occupy the land. Land used for roads and other services is said to be occupied. In some cases the occupied land figure is an estimate. There are also cases where firms have probably started their operations after the study cut off date, but are reported as occupying land because the effective starting date was not available.


GRAPHIC #1
AVERAGE SIZE OF PARKS, BY AGE
ACRES
240
220
200
180
160
140
120
100
80
60
40
20
ATL.
N.B.
N.S.
P.E.I.
NFLD.
1 2 3 4 5 6 7 8 9 10 +
YEARS


GRAPHIC #2
AVERAGE UTILIZATION RATIO,
BY SIZE OF PARKS
UTILIZATION RATIO
%
100
90
80
70
60
50
40
30
20
10
SIZE OF GROUPS
0
50
100
150
200
250
300
NFLD.
P.E.I.
N.S.
N.B.
ATL.

For the Atlantic Region as a whole, the average utilization ratio — the number of occupied acres expressed as a percentage of the number of developed acres per park — was 52 per cent as of December 31, 1976. Nineteen parks or almost half of all DREE-funded parks were more than 50 per cent occupied and 11 parks or some 25 per cent of all parks were more than 75 per cent utilized. On the other hand, some 13 parks, or 30 per cent were less than 25 per cent occupied.

Graphic 2 illustrates the distribution of the 43 DREE-funded industrial parks by utilization ratios for the Atlantic Region and for each province by size of parks. An examination of this table at the regional level indicates that average park utilization improved gradually as park size increased, reaching a maximum utilization rate of 70 per cent for the two parks containing over 300 acres. Almost one third of the parks were in the 51 - 100 developed acre category and the average utilization ratio for these parks was about 47 per cent.

The lowest level of utilization was experienced by the smallest parks, those up to 50 acres in size, which averaged about 45 per cent occupancy.

On a provincial basis, all parks in P.E.I. were in the same size category. Newfoundland showed an increasing utilization ratio concurrent with size of parks. The average utilization ratio for Nova Scotia parks was 58 per cent and every category of park size scored high in terms of average utilization increasing with park size.

In New Brunswick, on the other hand, the average utilization rate was 50 per cent; 19 parks or about 70 per cent of that province's parks contained 100 acres or less. Only the parks in the 301 acres plus rated high with 72 per cent utilization ratio. Generally, then, there was no consistent relationship between park size and utilization in the case of New Brunswick parks. Therefore, in New Brunswick and Nova Scotia as well as for the Atlantic Region as a whole, the most intensively utilized parks were those over 300 acres in size followed by the 101-300 category.

Another hypothesis tested was that park utilization is positively related to the length of time the park has been in operation e.g. that park utilization increases with time. Average utilization ratios for parks in various age brackets in the Atlantic Region and in each of the provinces are shown in Graphic 3.

For the Atlantic Region as a whole, average operating

time for the 43 DREE-funded parks was 6.7 years. Parks in the 0 years to 2.5 years age group had an average utilization ratio of 39 per cent. Parks that were older than 2.5 years but under 5 years of age had an average utilization ratio of 29 per cent. Utilization ratios increased to 50 per cent for parks between 5.1 and 7.5 years of age and increased substantially to 68 per cent for those parks between 7.6 and 10 years of age. However, utilization declined slightly to 63 per cent for parks over 10 years of age. Hence, while there was a general tendency for older parks to be more utilized, deviations from the expected trend did occur.

Parks in Newfoundland and P.E.I. showed a constant increase in utilization ratio with age, i.e. the older the parks, the higher the average utilization ratio. New Brunswick parks averaged 6.4 years of age and their average utilization ratio was 50 per cent. The average utilization ratio for parks in New Brunswick in the 0—2.5 year age group was 42 per cent (partly due to the Dieppe park which had a utilization ratio of 62 per cent); however, the average utilization ratio of the parks in the 2.6—5 year age group declined to 20 per cent. The highest utilization ratio is in the 7.6—10 year age group, at 72 per cent. In the case of Nova Scotia, parks averaged 10.7 years of age and they were on average, 58 per cent occupied. Average utilization ratios for Nova Scotia were highest for the parks over 10 years of age, followed by the 5.1—7.5 year age group.

The results of this analysis indicate that there tends to be a positive relationship between park age and utilization in the case of the provincial totals, as the provinces with the lowest average age of parks also have the lowest utilization ratios. Nova Scotia, having by far the oldest parks in the Region, recorded the highest utilization ratio.

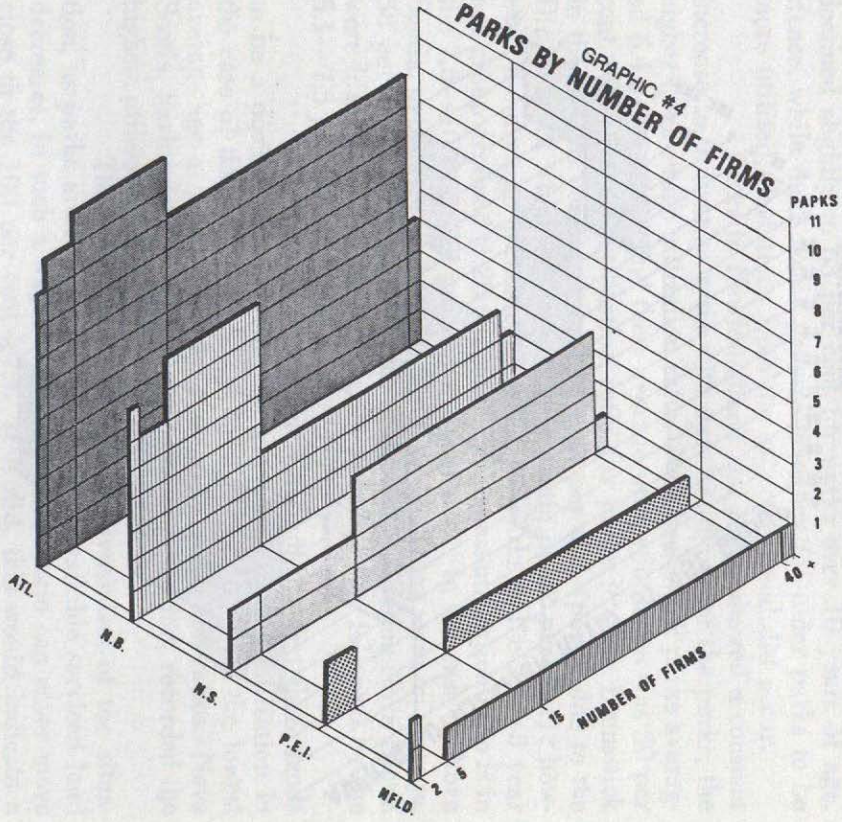
These facts demonstrate the dynamism of the situation, as parks are enlarged as soon as the available serviced land decreases, in such a way that the utilization ratio can never move close to the 100 per cent level. If it did, this would indicate a shortage of industrial serviced land.

FIRMS AND AGE OF PARKS

The whole "raison d'être" of industrial parks is to attract industries and create jobs which provide payrolls. In the

GRAPHIC #3
AVERAGE UTILIZATION RATIO, BY AGE GROUP
UTILIZATION RATIO
%
100
90
80
70
60
50
40
30
20
10
PARK AGE
10
9
8
7
6
5
4
3
2
1
ATL.
N.B.
N.S.
P.E.I.
NFLD.

GRAPHIC #4


PARKS BY NUMBER OF FIRMS
PAPKS
11
10
9
8
7
6
5
4
3
2
1
ATL.
N.B.
N.S.
P.E.I.
NFLD.
2
5
15
40 +
NUMBER OF FIRMS

final instance, these are the true indications of the performance of a park. Data was collected on the number of firms in each park.

As of December 31, 1976 there were 769 operational firms in the 43 DREE-funded industrial parks in the Atlantic Region, an average of 18 firms per park. Seven parks contained one firm and two parks did not have a single operational firm at the time of data collection; however, both these parks were less than two years old.

As reflected in Graphic 4, for the Atlantic Region as a whole 19 parks or almost half of the total DREE-funded parks contained five firms or less; 30 parks or 70 per cent of the total number of parks had a maximum of 15 firms. However, it should be noted that 21 parks, or almost half of the 43 DREE-funded parks were less than five years old. Of the four parks containing more than 40 firms, three were over 15 years old.

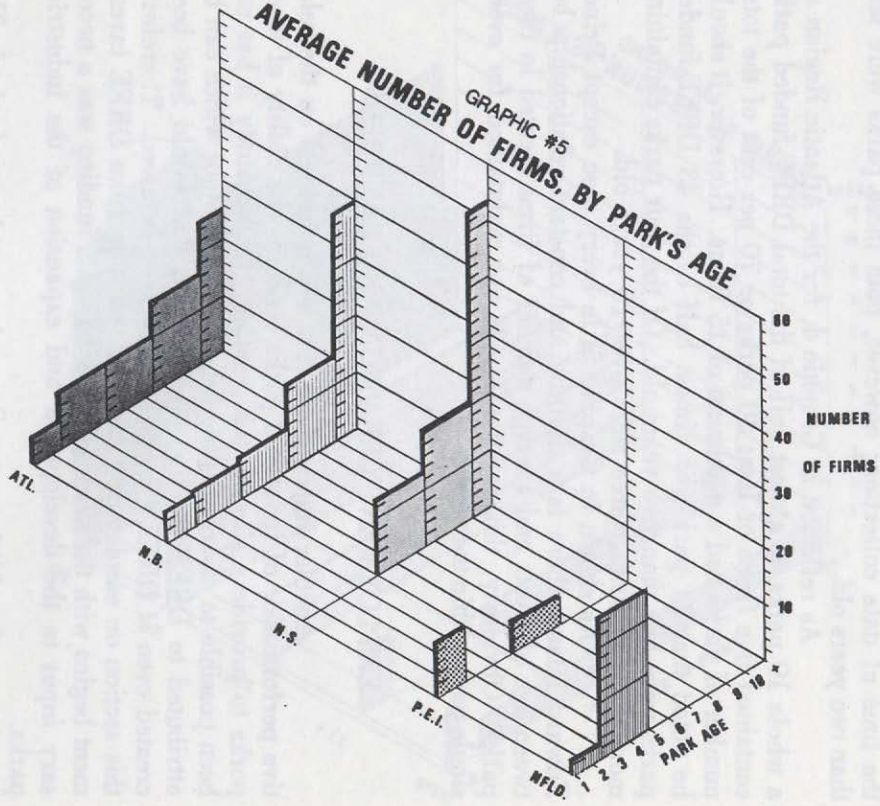
As shown in Graphic 5, in every case except Prince Edward Island, there is a definite and constant relationship between age of parks and average number of firms located in these parks. Obviously, this relationship is not maintained for every single park within the region.

EMPLOYMENT CREATION AND PAYROLLS

Another important factor which impacts on the relative performance of industrial parks concerns the ability of those parks to provide a site for job creation. In this study it has not been possible to clearly distinguish between the jobs which can be attributed to DREE funding and the jobs that would have been created even if DREE's funds had not been involved. Therefore, this section on employment creation resulting from DREE investment begins with the assumption that DREE funding was a necessary input to the development and expansion of the industrial parks.

In addition, one other point must be emphasized. The attribution of jobs represents a static situation in what is really a very dynamic process. During the course of a year, a firm's employment picture may demonstrate a broad range in terms of total number of full-time employees. Therefore, the data presented in this situation must only be looked upon as representative of

GRAPHIC #5


AVERAGE NUMBER OF FIRMS, BY PARK'S AGE
NUMBER OF FIRMS
60
50
40
30
20
10
ATL.
N.B.
N.S.
P.E.I.
NFLD.
1 2 3 4 5 6 7 8 9 10 +
PARK AGE

the average number of man-years in 1976 — not as representative of a continuing situation. The data gathered was in terms of man-years of employment, being less than peak employment for seasonal operations.

Jobs that were associated with industrial park land that was actually developed (or assisted in some way) with the assistance of DREE funds totalled 18,047 in the Atlantic Region, or an average of 420 employees per park.

The hypotheses to be verified with the employment data were that employment increases with park size and with park age.

Graphic 6 provides the average employment figures by size of parks for the four provinces and for the Atlantic Region.

Except for P.E.I. for which all employment is in the 0—50 acre parks, and for which no trend can be drawn, every other province and the region as a whole show a consistent and positive relationship between park size and average employment.

Graphic 7 provides the average employment figures by age of parks for all four Atlantic Provinces and for the region as a whole.

At the regional level, the data reveals a clear relationship between parks' employment and parks' age. The same relationship is shown for New Brunswick and Newfoundland. In Prince Edward Island an inverse relationship is demonstrated; however, this province has only three parks, too few to establish a statistically reliable relationship. Nova Scotia's nine parks show a deviation from the expected trend for the parks aged 7.6 to 10 years.

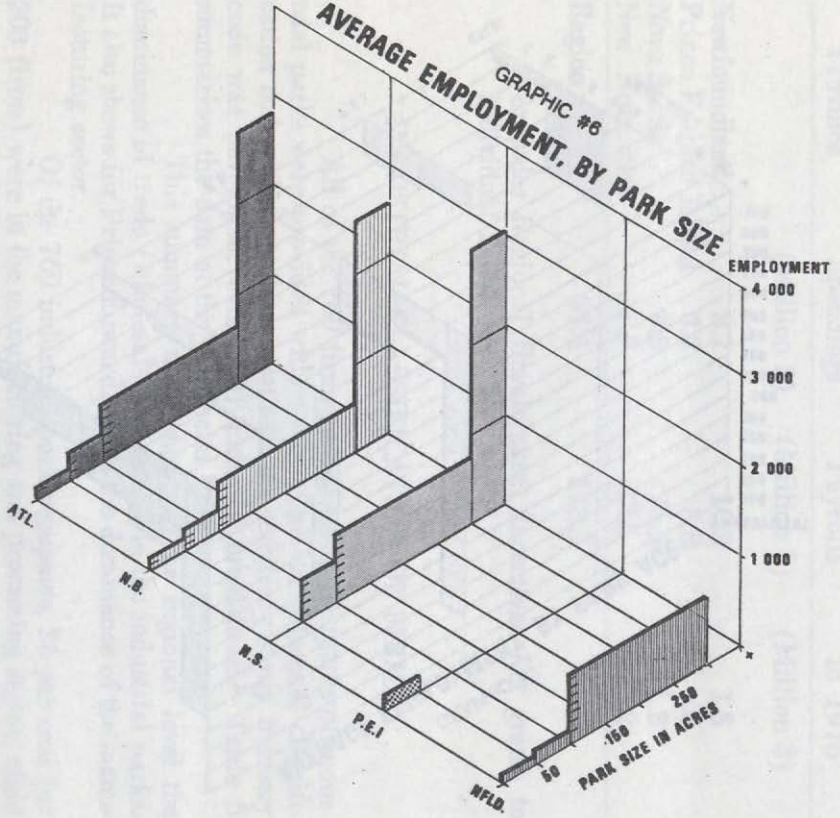
The end product from the industrial parks, their occupants generating employment, is the payroll[1], or earned income of the employees. The payroll for all employees working in the industrial parks was estimated at $178 million for 1976, most of which was in New Brunswick and Nova Scotia. Table 4 presents the income data by province for 1976, together with the total DREE spending in these provinces for the total period under review.

(1) Payrolls were derived using the number of man-years of employment at the firm's level multiplied by the average weekly earnings for 1976, from Statistics Canada. When these annual averages were available at the community level (as was the case of 12 communities with industrial parks), they were utilized. Otherwise, the provincial annual averages were used.

The employees earning such wages pay federal and provincial income taxes, at an estimated 15 per cent rate.[1] As a result, it is estimated that federal and provincial governments collected over $26 million in taxes in 1976, as a result of the employment in industrial parks.

(1) This assumes an average income of $9,869 per man-year, and an average family of two children.

GRAPHIC #6


AVERAGE EMPLOYMENT, BY PARK SIZE
EMPLOYMENT
4 000
3 000
2 000
1 000
ATL.
N.B.
N.S.
P.E.I
NFLD.
50
150
250
PARK SIZE IN ACRES

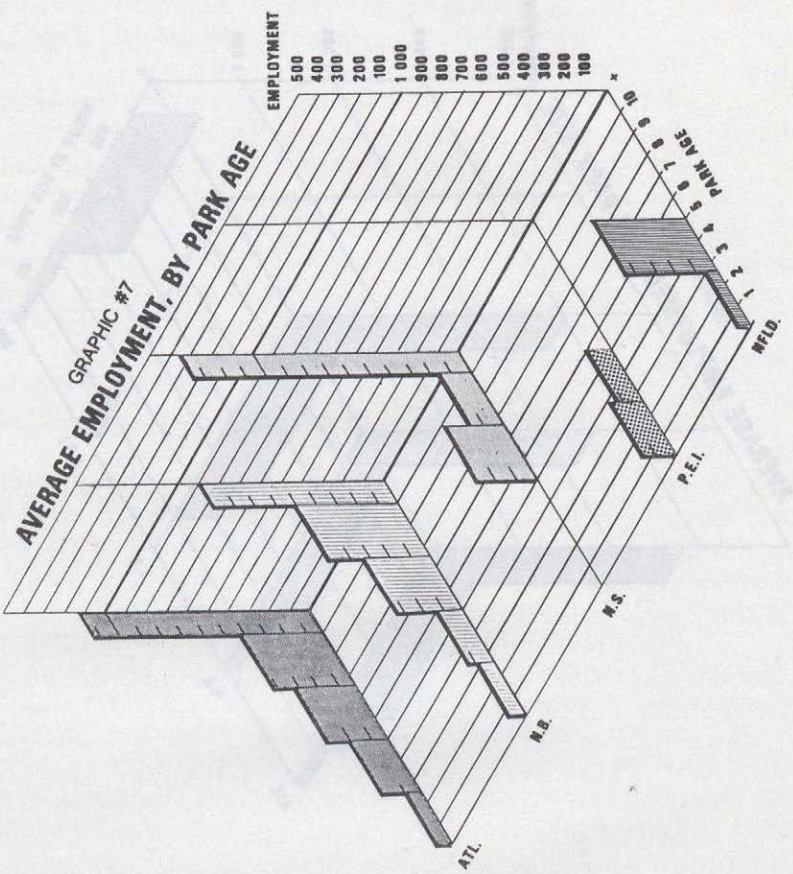

GRAPHIC #7
AVERAGE EMPLOYMENT, BY PARK AGE
EMPLOYMENT
500
400
300
200
100
1 000
900
800
700
600
500
400
300
200
100
PARK AGE
1 2 3 4 5 6 7 8 9 10
NFLD.
P.E.I.
N.S.
N.B.
ATL.

TABLE 4

Payrolls for 1976, Total DREE Spendings* and Estimated Income Tax Pay-Back

Province	Total DREE Spendings	1976 Payrolls	Estimated Income Taxes Paid in 1976
	(Million $)	(Million $)	(Million $)
Newfoundland	3.1	10.3	1.5
Prince Edward Island	3.2	3.8	.6
Nova Scotia	8.3	75.5	11.3
New Brunswick	16.5	88.5	13.2
Region	31.1	178.1	26.6

* excludes Regional Development Incentives Act grants to individual firms.

INDUSTRIAL CLASSIFICATION OF FIRMS

All of the 769 firms identified as occupants of industrial parks were provided with the appropriate industrial classification codes. For analysis purposes, an arbitrary study industry code was developed, with a 31 industry breakdown.[1] Table 5 summarizes the data at the provincial level.

This summary table shows at the regional level the dominance of trade (wholesale and retail) in the industrial parks. It also shows for Prince Edward Island the dominance of the manufacturing sector.

Of the 769 industrial park occupants, 26 per cent (or 203 firms) were in the manufacturing and processing sector, eight per cent (or 63 firms) were in construction activity, 11 per cent (88 firms) were in transportation, communication and utilities, 42 per cent (322 firms) were in trade, both wholesale and retail and 12 per cent (93 firms) were in other activities such as finance, insurance, real estate, community, business and personal services and public administration.

(1) The S.I.C. represents the dominant activity of the firm.

TABLE 5

Major Industrial Groupings by Province

Province	Mfg and Proc.		Const-ruction		Transportation Communications and Utilities		Trade		Others	
	No.	%	No.	%	No.	%	No.	%	No.	%
Nfld.	9	16	5	9	6	11	33	59	3	5
P.E.I.	16	70	1	4	0	0	6	26	0	0
N. S.	61	18	22	7	44	13	150	45	57	17
N. B.	117	33	35	10	38	11	133	37	33	9
Region	203	26	63	8	88	11	322	42	93	12

In order to determine whether special types of parks attract particular types of firms, table 6 provides the major type of firms by park size.

At the provincial level, it is difficult to notice trends by park sizes, due to the level of detail and the small size of the universes involved. However, the most striking observation to be made from the table is the high proportion (70 per cent) of manufacturing and processing activities in Prince Edward Island parks. New Brunswick has 33 per cent of the firms in that sector while Nova Scotia and Newfoundland have 18 per cent and 16 per cent respectively.

At the regional level, there is a high proportion of manufacturing and processing activities in the smaller parks, with a constant decrease as parks grow larger. The parks being over 300 acres in size appear to be dominated by trade (wholesale and retail) activities, at 54 per cent of all occupants.

THE MANUFACTURING SECTOR

As the manufacturing sector is usually considered as the motor of a developing economy and as DREE's major programmes (such as RDIA) relate more to the manufacturing and processing sector than the other sectors, this section pursues in

TABLE 6
INDUSTRIAL CLASSIFICATION OF FIRMS, BY SIZE OF PARKS

Size of Park	Manufacturing & Processing Firms		Construction		Trans., Comm. & Utilities		Trade		Others		Total	
	No. of Firms	% of Total	No. of Firms	% of Total	No. of Firms	% of Total	No. of Firms	% of Total	No. of Firms	% of Total	No. of Firms	% of Total
NEWFOUNDLAND												
0 — 50	1	7	2	14	—	—	10	71	1	7	14	100.0
51 — 100	—	—	1	17	1	17	4	66	—	—	6	100.0
101 — 300	8	22	2	5	5	14	19	53	2	5	36	100.0
301 +	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	9	16	5	9	6	11	33	59	3	5	56	100.0
PRINCE EDWARD ISLAND												
0 — 50	16	70	1	4	—	—	6	26	—	—	23	100.0
51 — 100	—	—	—	—	—	—	—	—	—	—	—	—
101 — 300	—	—	—	—	—	—	—	—	—	—	—	—
301 +	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	16	70	1	4	0	—	6	26	0	—	23	100.0
NOVA SCOTIA												
0 — 50	—	—	—	—	—	—	—	—	—	—	—	—
51 — 100	8	22	2	5	11	30	13	35	3	8	37	100.0
101 — 300	35	47	5	7	16	21	12	16	7	9	75	100.0
301 +	18	8	15	7	17	8	125	56	47	20	222	100.0
TOTAL	61	18	22	7	44	13	150	45	57	17	334	100.0
NEW BRUNSWICK												
0 — 50	22	43	4	8	3	6	17	33	5	10	51	100.0
51 — 100	35	45	5	6	8	10	25	32	5	6	78	100.0
101 — 300	31	29	21	20	10	9	30	28	14	13	106	100.0
301 +	29	24	5	4	17	14	61	50	9	8	121	100.0
TOTAL	117	33	35	10	38	11	133	37	33	9	356	100.0
ATLANTIC												
0 — 50	39	44	7	8	3	34	33	37	6	7	88	100.0
51 — 100	43	35	8	7	20	16	42	35	8	7	121	100.0
101 — 300	74	34	28	13	31	14	61	28	23	11	217	100.0
301 +	47	14	20	6	34	10	186	54	56	16	343	100.0
REGION TOTAL	203	26	63	8	88	11	322	42	93	12	769	100.0

greater depth the analysis of these secondary activities.

The very rationale for government investments in industrial parks is to facilitate the establishment of manufacturing and processing firms. Moreover, DREE's Regional Development Incentive Act (RDIA) supports the department's objective of increasing employment and incomes in the manufacturing sector. Both programs (industrial park assistance and RDIA) are complementary to the department's objective.

In order to observe any concentration of a particular type of activity, table 7 provides by province the major secondary types of activity.

While Newfoundland does not have enough manufacturing and processing firms in the industrial parks to denote any trend, it is noteworthy that 90 per cent of the firms are in the two resource sectors of food processing and forest related sectors. In Prince Edward Island, the more striking observation is that only 13 per cent of the firms are in food processing, the island's dominant sector. The other firms indicate a diversification of the manufacturing sector.

Both Nova Scotia and New Brunswick have a sufficient number of manufacturing and processing firms to indicate a diversification pattern. In the case of Nova Scotia, the "others" category is in most part made up of rubber products, textile and clothing industries.

TABLE 7

Major Industry Groupings by Province
Manufacturing and Processing

Industry Type	NFLD.		P.E.I.		N.S.		N.B.		Region	
	No.	%	No.	%	No.	%	No.	%	No.	%
Metal Fabricating	1	11%	3	19%	11	18%	24	21%	39	19%
Food & Beverage	5	55%	2	13%	13	21%	17	15%	37	18%
Wood Industries	—	—	2	13%	8	13%	16	14%	26	13%
Transp. Equip.	—	—	1	6%	6	10%	8	7%	15	7%
Non-Metal. Min.	—	—	1	6%	2	3%	11	9%	14	7%
Chem. & Allied	—	—	1	6%	2	3%	9	8%	12	6%
Machinery Ind.	—	—	1	6%	1	2%	8	7%	10	5%
Paper & Allied	3	34%	—	—	1	2%	5	4%	9	4%
Furn. & Fixture	—	—	—	—	3	5%	5	4%	8	4%
Primary Metals	—	—	2	13%	2	3%	4	3%	8	4%
Others	—	—	3	19%	12	20%	10	9%	25	12%
Total	9	100%	16	100%	61	100%	117	100%	203	100%

At the regional level, the 203 manufacturing and processing firms are again pointing to diversification into higher productivity industries. Table 8 which follows provides a comparison between parks occupants and the Atlantic Region 1975 manufacturing and processing firms.

From this table, it is clear that industrial parks are attracting firms of certain types in a different proportion than does the economy as a whole. This is especially the case for higher value industries such as metal fabricating, chemical and allied products, machinery industry and primary metals. On the other hand, as could be expected, the resource-based industries such as food and beverage and wood industries are not being attracted to industrial parks, (away from the resources) in the same proportion as they exist in the total economy.

TABLE 8

Industrial Parks Occupants and Regional Manufacturing Firms

Industry Groups	Industrial Parks		Total Regional Firms(1)		Park as %
	Number	%	Number	%	Of Total
Metal Fabricating	39	19%	107	7%	36%
Food & Beverage	37	18%	522	32%	7%
Wood Industries	26	13%	375	23%	7%
Transport. Equip.	15	7%	87	5%	17%
Non-Metallic Minerals	14	7%	82	5%	17%
Chemical & Allied	12	6%	34	2%	35%
Machinery Ind.	10	5%	23	1%	43%
Paper & Allied	9	4%	38	2%	24%
Furniture & Fixtures	8	4%	55	3%	15%
Primary Metals	8	4%	10	1%	80%
Others	25	12%	302	18%	8%
Total	203	100%	1,635	100%	12%

(1) Statistics Canada, Manufacturing Industry of Canada, Cat. 31-203, 1975, Table 7, page 20.

These findings indicate that industrial parks are playing a role in diversifying the economy, moving toward higher value products, with the newer industrial establishments involved in higher value added manufacturing.

While DREE provided financial assistance to the 43 parks under study, resulting in the broadening of the region's manufacturing base, the department's Regional Development Incentive Act was also a major contributing factor to this performance, as were the park related provincial programs.

Table 9 provides by park the number of RDIA firms granted assistance, expressed as a percentage of the total number of park occupants. While the greater proportion of RDIA grants were provided to New Brunswick and Nova Scotia parks' occupants, as could be expected by their number of firms, Prince Edward Island had 56.5 per cent of all park occupants having received RDIA assistance. This is in fact consistent with the previous findings that a greater proportion of that province's parks occupants were in manufacturing and processing activities, being the eligible type of RDIA firm.

Table 10 provides information for the manufacturing and processing firms and employment in conjunction with the RDIA assisted firms and employment. At the regional level, 54 per cent of all manufacturing and processing firms located in the parks were RDIA assisted, representing 69 per cent of all of that sector's employment. By province, Prince Edward Island had 81 per cent of its manufacturing and processing firms assisted, representing 94 per cent of the employment. Newfoundland's assisted manufacturing and processing firms were 78 per cent of the total, with 87 per cent of the employment. Nova Scotia and New Brunswick were somewhat lower at 59 per cent and 46 per cent respectively, representing 88 per cent and 49 per cent of the employment.

At the individual parks' level, 15 parks had 100 per cent of their manufacturing and processing firms RDIA assisted. Twenty-three parks had over 75 per cent of that sector's employment RDIA assisted.

While the data indicates that a large proportion of manufacturing and processing firms located in parks were RDIA assisted, the number of RDIA assisted firms as a percentage of total RDIA assisted firms in the region is quite low at 19 per cent for the region. In other words, 81 per cent of all RDIA as-

TABLE 9

RDIP ASSISTED FIRMS IN INDUSTRIAL PARKS

	No. of Parks	Total No. Parks Occupants No.	%	RDIP Firms Offered Grants No.	%	RDIP Assistance Offered $ Million	%	No. RDIP Firms as % of Parks Occupants
Newfoundland	5	56	7.3	8	7.0	1.5	4.9	14.3
Prince Edward Island	3	23	3.0	13	11.4	2.1	6.8	56.5
Nova Scotia	9	334	43.4	37	32.5	15.4	50.0	11.1
New Brunswick	26	356	46.3	56	49.1	11.8	38.3	15.7
Atlantic Region	43	769	100.0	114	100.0	30.8	100.0	14.8

TABLE 10
RDIP CONTRIBUTION(1) TO MANUFACTURING AND PROCESSING FIRMS

	Total Firms in Park	Mfg. & Processing		RDIP Contribution		RDIP Assisted firms as % of Total Manufacturing		Assisted Firms in Park As % of Total
		Firms (number)	Employ. (number)	Firms (number)	Employ. (number)	Firms (%)	Employment (%)	Assisted Firms %
NEWFOUNDLAND								
Donovan's	36	8	129	6	104	75	81	
Grand Falls	6	0	0	0	0	0	0	
Carbonear	0	0	0	0	0	0	0	
Maple Valley	13	1	65	1	65	100	100	
Gander	1	0	0	0	0	0	0	
TOTAL	56	9	194	7	169	78	87	10
PRINCE EDWARD ISLAND								
Parkdale	5	1	42	1	42	100	100	
West Royalty	16	13	161	10	142	77	88	
St. Eleanors	2	2	113	2	113	100	100	
TOTAL	23	16	316	13	297	81	94	19
NOVA SCOTIA								
Point Edward	26	7	205	2	131	29	64	
Stellarton	2	2	75	2	75	100	100	
Lakeside	12	4	127	3	117	75	92	
Burnside	222	18	737	8	597	44	81	
Amherst	20	13	991	9	755	69	76	
Truro	18	8	927	7	878	88	95	
Debert	11	7	388	4	348	57	90	
Port Hawesbury	20	1	4	0	0	0	0	
Bridgewater	3	1	1,200	1	1,200	100	100	
TOTAL	334	61	4,654	36	4,101	59	88	18

NEW BRUNSWICK

MID (Moncton)	121	29	1,007	10	490	34	49	
Scoudouc	8	7	850	7	850	100	100	
Dieppe	29	9	122	4	31	44	25	
Caledonia	14	3	58	2	33	67	57	
Dorchester Cape	1	1	40	1	40	100	100	
McAllister	3	1	17	1	17	100	100	
Spruce Lake	8	3	85	1	60	33	71	
Grandview	29	15	399	6	174	40	44	
Sussex	12	8	277	2	30	25	11	
Champlain	2	2	410	1	10	50	2	
Fredericton	59	10	568	6	351	60	62	
Oromocto East	3	2	85	2	85	100	100	
Nackawic	13	6	643	0	0	0	0	
Clair	4	4	78	1	30	25	38	
St. Hilaire	0	0	0	0	0	0	0	
Grand Falls	3	2	55	0	0	0	0	
St. Leonard	1	1	8	1	8	100	100	
Woodstock	7	3	58	2	46	67	79	
Hartland	6	3	17	1	8	33	47	
Forestry-Bathurst	1	1	120	1	120	100	100	
Bathurst	7	1	23	1	23	100	100	
Petit-Rocher	1	1	9	1	9	100	100	
Caraquet	1	0	0	0	0	0	0	
Shippegan	1	1	35	1	35	100	100	
Newcastle	17	3	20	1	6	33	30	
Chatham	5	1	20	1	20	100	100	
TOTAL	356	117	5,004	54	2,476	46	49	22
REGION TOTAL	769	203	10,168	110	7,043	54	69	19

Note: (1) Only those firms coded to the manufacturing and processing industry. Some firms coded under "construction" may have received a contribution but are excluded from this table.

sisted firms located outside industrial parks. This is explained by the large proportion of resource-based firms, assisted by RDIA, which located close to the resource, outside the parks.

INCREMENTAL JOB CREATION

With the information collected on previous location or origin of firms, called "Status" information,[1] it is possible to estimate the proportion to which employment associated with industrial parks is incremental or relocated.

For the purpose of this study, incremental employment is deemed to be employment associated with firms which are newly established, or new to the Atlantic Region, and employment from expanded firms, i.e. firms which expanded in an industrial park without closing their previous operations. Relocated employment on the other hand is deemed to be associated with firms which had a previous location outside industrial parks in the Atlantic Region, and which closed their old plants to relocate in an industrial park, (including those which expanded while relocating).

Table 11 has the detailed status information by park. While various manipulations are possible with this data, it lends itself to determining the amount of "new" employment in the industrial parks as opposed to "relocated" employment. The new employment is derived by deducting "relocated" employment (last column) from total employment. At the regional level, some 75 per cent of all park employment can be considered new employment. By province, Newfoundland has the lowest proportion of

(1) The following codes were utilized.

N — A new company or operation. This category also includes relocated firms from outside the Atlantic Region and is deemed to represent a new operation to the Atlantic Region resulting in incremental employment to the region.

R — A plant or facility that has relocated in the park from anywhere within the Atlantic Region, resulting in the closing of its previous operation. This situation is considered as not creating any new employment, even if accompanied by an expansion.

E — An expansion of an operation previously located outside the park, but without closing its previous facility. It is thus resulting in incremental employment.

TABLE 11
CLASSIFICATION OF FIRMS, BY STATUS

Park Name	Status of firms N	R	E	Total	Employment of firms with Status R
NEWFOUNDLAND					
Donovan's	4	26	6	36	562
Grand Falls	—	6	—	6	100
Carbonear	—	—	—	0	0
Maple Valley	2	9	2	13	82
Gander	1	—	—	1	0
TOTAL	7	41	8	56	744
PRINCE EDWARD ISLAND					
Parkdale	2	3	—	5	68
West Royalty	10	4	2	16	70
St. Eleanors	1	1	—	2	92
TOTAL	13	8	2	23	230
NOVA SCOTIA					
Point Edward	14	3	9	26	81
Stellarton	1	1	—	2	38
Lakeside	8	2	2	12	26
Burnside	88	103	31	222	1,531
Amherst	12	8	—	20	123
Truro	13	4	1	18	35
Debert	9	1	1	11	18
Port Hawkesbury	15	5	—	20	67
Bridgewater	3	—	—	3	0
TOTAL	163	127	44	334	1,919
NEW BRUNSWICK					
MID	42	11	68	121	226
Scoudouc	7	1	—	8	120
Dieppe	15	8	6	29	114
Caledonia	5	—	9	14	0
Dorchester Cape	1	—	—	1	0
McAllister	—	3	—	3	215
Spruce Lake	2	4	2	8	47
Grandview	7	12	10	29	312
Sussex	10	1	1	12	30
Champlain	2	—	—	2	0
Fredericton	37	10	12	59	311
Oromocto East	2	1	—	3	75
Nackawic	13	—	—	13	0
Clair	4	—	—	4	0
St. Hilaire	—	—	—	0	0
Grand Falls	2	1	—	3	4
St. Leonard	1	—	—	1	0
Woodstock	4	1	2	7	5
Hartland	4	2	—	6	13
Forestry-Bathurst	1	—	—	1	0
Bathurst	1	3	3	7	68
Petit-Rocher	1	—	—	1	0
Caraquet	—	1	—	1	6
Shippegan	1	—	—	1	0
Newcastle	11	6		17	66
Chatham	1	3	1	5	15
TOTAL	174	68	114	356	1,627
REGION TOTAL	357	244	168	769	4,520

new employment, at 23 per cent while New Brunswick has 82 per cent of new employment. By park, the range is from 100 per cent incremental employment to 100 per cent relocated employment.

Table 12, which follows, captures this data at the provincial level.

TABLE 12

Firms and Employment, by Status

	NFLD.		P.E.I.		N.S.		N.B.		Region	
	No.	%	No.	%	No.	%	No.	%	No.	%
Incremental										
Firms	15	27	15	65	207	62	288	81	525	68
Employment	225	23	195	46	5,838	75	7,269	82	13,527	75
Relocated										
Firms	41	73	8	35	127	38	68	19	244	32
Employment	744	77	230	54	1,919	25	1,627	18	4,520	25
Total		100%		100%		100%		100%		100%

For the region as a whole, 68 per cent of the firms and 75 per cent of their associated employment represented incremental activity in the parks, while 32 per cent of the firms and 25 per cent of the associated employment represented a relocated economic activity.

By province, both New Brunswick and Nova Scotia had a considerably larger proportion of their firms and associated employment being incremental in nature. Newfoundland had inverse proportions while Prince Edward Island had 65 per cent of incremental firms, corresponding to 46 per cent of the generated employment.

The higher incrementality for certain provinces was studied by individual parks to find the explaining variable. It was hypothesized that older parks would have a higher proportion of incremental activity than the younger parks, as they were in operation in time to capture and attract firms wishing to establish in those communities over time.

The results were inconclusive because a number of parks, especially those with one or a few firms, had results, independent of age, of 0 to 100 incrementality. The wide deviations aborted the results of the regression.

URBAN LAND RATIONALIZATION

As previously stated, some 244 firms, generating some 4,520 jobs, have over the years relocated from within the Atlantic Region to industrial park locations. While these do not represent incremental economic activity to the region, they do indicate a rationalization of land resulting in many cases in freeing land in urban areas and in residential districts. These movements provide a better indication of the attracting forces of an industrial park.

These relocations represent the freeing of prime land for other urban uses. Table 13 provides an estimate of these acreages.

TABLE 13

Estimated Acreages From Relocated Firms

Province	No. of Firms	Avg. Acres per Firm	Acreage Available
Nfld.	41	2.64	108
P.E.I.	8	1.84	15
N.S.	127	2.88	366
N.B.	68	4.1	279
Region	244	3.15	768

Some 768 acres of land have been released for other use as a result of firms relocating to industrial parks.

PRODUCT MARKET OF PARK OCCUPANTS

Table 14 provides information on principal market area of firms. In the interpretation of this data, it is important to realize that "principal" market was looked at. This means that many firms which indicate provincial (L) or Atlantic (A) as principal markets could in fact be exporting a small proportion of their production to elsewhere in Canada, or outside Canada. Only firms which clearly have a national (N) or international (I) market are listed as such.

Table 14 indicates that 686 firms (89 per cent of all firms located in industrial parks) had their major markets either in the province in which they were established, or in the Atlantic Region, while 10.8 per cent of the firms with industrial parks location had national or international major markets. However, as 74 per cent of all firms located in industrial parks were in the service sector in construction, wholesaling, retailing, transportation, warehousing, etc., by the very nature of the output of these firms, markets are by definition local, provincial and or regional.

The more exportable products are to be found in the manufacturing and processing sector. In fact, most "services" being produced in industrial parks are not exportable. Of the 769 firms located in industrial parks, 203 were in manufacturing and processing. These firms are shown, with their major markets, by parks in table 15. At the regional level, some 60 firms (or 30 per cent) reported a national or international market. New Brunswick had a similar percentage of "outside the Atlantic" shipments while Nova Scotia had 26 per cent. Prince Edward Island, on the other hand had 56 per cent of its manufacturing and processing firms located in industrial parks indicating national or international major markets. Newfoundland's manufacturing and processing firms all indicated provincial markets.

By individual parks, the range of "foreign" markets varied from 0 to 100 per cent, with no discernible trend.

MODE OF TRANSPORT

With respect to transporting a firm's product to the market, data was collected on the primary or dominant means of transport.[1] For some 186 firms, the question was not applicable, as in the case of finance companies, government and business offices, retail trade, construction, communication and utilities.

(1) Firms are coded with letters to indicate the principal modes, as follows:
A — Truck (road)
B — Train (rails)
C - D — Plane and/or ship (air and water)
N/A — Not applicable, (as in the case of retail establishments)

TABLE 14
CLASSIFICATION OF FIRMS, BY PRODUCT MARKET

Park Name	Product Market of Firms L	A	N	I	Total
NEWFOUNDLAND					
Donovan's	33	3	—	—	36
Grand Falls	5	1	—	—	6
Carbonear	—	—	—	—	0
Maple Valley	11	2	—	—	13
Gander	1	—	—	—	1
TOTAL	50	6	—	—	56
PRINCE EDWARD ISLAND					
Parkdale	4	—	—	1	5
West Royalty	5	3	5	3	16
St. Eleanors	1	1	—	—	2
TOTAL	10	4	5	4	23
NOVA SCOTIA					
Point Edward	23	2	—	1	26
Stellarton	—	2	—	—	2
Lakeside	9	3	—	—	12
Burnside	63	141	9	9	222
Amherst	7	8	3	2	20
Truro	9	6	2	1	18
Debert	3	5	3	—	11
Port Hawkesbury	19	1	—	—	20
Bridgewater	2	—	—	1	3
TOTAL	135	168	17	14	334
NEW BRUNSWICK					
MID	21	94	4	2	121
Scoudouc	1	3	4	—	8
Dieppe	4	19	6	—	29
Caledonia	2	12	—	—	14
Dorchester Cape	—	1	—	—	1
McAllister	—	2	1	—	3
Spruce Lake	1	6	1	—	8
Grandview	1	23	5	—	29
Sussex	6	1	5	—	12
Champlain	—	—	2	—	2
Fredericton	44	14	1	—	59
Oromocto East	2	—	1	—	3
Nackawic	11	1	—	1	13
Clair	—	—	3	1	4
St. Hilaire	—	—	—	—	0
Grand Falls	1	—	1	1	3
St. Leonard	1	—	—	—	1
Woodstock	5	—	1	1	7
Hartland	3	3	—	—	6
Forestry-Bathurst	—	—	1	—	1
Bathurst	7	—	—	—	7
Petit-Rocher	1	—	—	—	1
Caraquet	1	—	—	—	1
Shippegan	—	—	—	1	1
Newcastle	17	—	—	—	17
Chatham	4	1	—	—	5
TOTAL	133	180	36	7	356
REGION TOTAL	328	358	58	25	769

TABLE 15
PRODUCT MARKET OF MANUFACTURING & PROCESSING FIRMS

Park Name	Mfg & Processing Firms (No.)	PRODUCT MARKET L	A	N	I
NEWFOUNDLAND					
Donovan's	8	8	—	—	—
Grand Falls	0	—	—	—	—
Carbonear	0	—	—	—	—
Maple Valley	1	1	—	—	—
Gander	0	—	—	—	—
TOTAL	9	9	—	—	—
PRINCE EDWARD ISLAND					
Parkdale	1	—	—	—	1
West Royalty	13	2	3	5	3
St. Eleanors	2	1	1	—	—
TOTAL	16	3	4	5	4
NOVA SCOTIA					
Point Edward	7	4	2	—	1
Stellarton	2	—	2	—	—
Lakeside	4	2	2	—	—
Burnside	18	5	9	—	4
Amherst	13	2	7	3	1
Truro	8	2	3	2	1
Debert	7	—	4	3	—
Port Hawkesbury	1	1	—	—	—
Bridgewater	1	—	—	—	1
TOTAL	61	16	29	8	8
NEW BRUNSWICK					
MID (Moncton)	29	6	18	3	2
Scoudouc	7	—	3	4	—
Dieppe	9	2	5	2	—
Caledonia	3	1	2	—	—
Dorchester Cape	1	—	1	—	—
McAllister	1	—	1	—	—
Spruce Lake	3	—	3	—	—
Grandview	15	—	11	4	—
Sussex	8	2	1	5	—
Champlain	2	—	—	2	—
Fredericton	10	4	5	1	—
Oromocto East	2	1	—	1	—
Nackawic	6	4	1	1	—
Clair	4	—	—	3	1
St. Hilaire	0	—	—	—	—
Grand Falls	2	—	—	1	1
St. Leonard	1	1	—	—	—
Woodstock	3	1	—	1	1
Hartland	3	—	3	—	—
Forestry-Bathurst	1	—	—	1	—
Bathurst	1	1	—	—	—
Petit Rocher	1	1	—	—	—
Caraquet	0	—	—	—	—
Shippegan	1	—	—	—	1
Newcastle	3	3	—	—	—
Chatham	1	—	1	—	—
TOTAL	117	27	55	29	6
REGION TOTAL	203	55	88	42	18

Table 16 provides the principal mode of transport for all 43 industrial parks. While it was to be expected that a majority of firms would be using trucks as their major mode of transport, the proportion of firms indicating trucks as their principal mode of transport was surprisingly high at 95 per cent. Only four per cent indicated rail as their principal means of transport, .5 per cent indicated air and one per cent indicated ships.

By province, only Nova Scotia had parks' occupants stating air and sea as major modes of transportation. All of P.E.I. firms were using trucks. When considering that the Atlantic Region is the major market area for 89 per cent of the parks' occupants, the findings are considered normal.

As it would be expected that the exportable products of the manufacturing and processing sector would be heavier users of rail, air and sea, table 17 provides the data for all parks with over 30 per cent of their occupants in the manufacturing and processing sectors indicating major markets outside the Atlantic.

As shown in the table, no relationship was demonstrated between manufacturing and processing exporting firms and modes of transportation.

EMPLOYMENT DENSITY AND INDUSTRIAL CLASSIFICATION

Employees per occupied acre of land in industrial parks was used as a descriptive variable for park employment density. For all Atlantic Region parks, table 18 shows that there were, on average, 6.9 employees per occupied acre. On a provincial basis, P.E.I. with the smallest and almost the youngest parks, had the highest average level of employment per occupied acre while the much larger and older New Brunswick parks had the lowest average employment density per occupied acre.

When relating industrial classification to employment density, this shows that for all the Atlantic Region parks, 74 per cent of park occupants were in the non-manufacturing category with close to seven employees per occupied acre of park land. In the case of P.E.I. parks, where almost 70 per cent of the firms were manufacturers and processors, employment density was the

TABLE 16

CLASSIFICATION OF FIRMS BY TRANSPORTATION MODES

	A	B	C	D	N/A	TOTAL
NEWFOUNDLAND						
Donovan's	28	4	—	—	4	36
Grand Falls	5	—	—	—	1	6
Carbonear	—	—	—	—	—	0
Maple Valley	7	—	—	—	6	13
Gander	—	—	—	—	1	1
TOTAL	40	4	—	—	12	56
PRINCE EDWARD ISLAND						
Parkdale	4	—	—	—	1	5
West Royalty	14	—	—	—	2	16
St. Eleanors	2	—	—	—	—	2
TOTAL	20	—	—	—	3	23
NOVA SCOTIA						
Point Edward	18	1	—	—	7	26
Stellarton	—	2	—	—	—	2
Lakeside	12	—	—	—	—	12
Burnside	152	8	2	3	57	222
Amherst	15	4	1	—	—	20
Truro	16	1	—	1	—	18
Debert	8	—	—	—	3	11
Port Hawkesbury	6	—	—	1	13	20
Bridgewater	3	—	—	—	—	3
TOTAL	230	16	3	5	80	334
NEW BRUNSWICK						
MID - Moncton	105	—	—	—	16	121
Scoudouc	7	—	—	—	1	8
Dieppe	20	—	—	—	9	29
Caledonia	14	—	—	—	—	14
Dorchester Cape	1	—	—	—	—	1
McAllister	3	—	—	—	—	3
Spruce Lake	6	2	—	—	—	8
Grandview	22	—	—	—	7	29
Sussex	9	—	—	—	3	12
Champlain	2	—	—	—	—	2
Fredericton	29	—	—	—	30	59
Oromocto East	2	1	—	—	—	3
Nackawic	7	1	—	—	5	13
Clair	4	—	—	—	—	4
St. Hilaire	—	—	—	—	—	0
Grand Falls	3	—	—	—	—	3
St. Leonard	1	—	—	—	—	1
Woodstock	4	—	—	—	3	7
Hartland	5	—	—	—	1	6
Forestry-Bathurst	1	—	—	—	—	1
Bathurst	5	—	—	—	2	7
Petit Rocher	1	—	—	—	—	1
Caraquet	—	—	—	—	1	1
Shippegan	1	—	—	—	—	1
Newcastle	7	—	—	—	10	17
Chatham	2	—	—	—	3	5
TOTAL	261	4	—	—	91	356
REGION TOTAL	551	24	3	5	186	769

TABLE 17

Parks with over 30 per cent of their manufacturing and processing firms having primary market areas outside the Atlantic, with primary modes of transport, in percentage.

Park	"Foreign" Market	Road	Rail	Air	Sea
West Royalty	61%	100%	—	—	—
Amherst	31	75	20%	5%	—
Truro	37	88	6	—	6%
Debert	43	100	—	—	—
Bridgewater	100	100	—	—	—
Scoudouc	57	100	—	—	—
Caledonia	66	100	—	—	—
Sussex	62	100	—	—	—
Champlain	100	100	—	—	—
Oromocto East	50	50	50	—	—
Clair	100	100	—	—	—
Grand Falls	100	100	—	—	—
Woodstock	66	100	—	—	—
Forestry-Bathurst	100	100	—	—	—
Shippegan	100	100	—	—	—

highest in the Region, averaging 10 employees per occupied acre. On the other hand, in New Brunswick parks, where employment density was the lowest, an average of 6.1 employees per occupied acre, two-thirds of park occupants were considered non-manufacturers. Newfoundland and Nova Scotia parks averaged 6.5 and 8.1 employees per occupied acre respectively and less than 20 per cent of the firms in these two provinces were manufacturers and processors.

Hence, there would appear to be a relationship between employment density and industrial classification of park occupants, i.e. P.E.I. parks have the highest employment density and the largest representation of manufacturers and processors while parks in the other three provinces have a substantially lower employment density and are dominated by service-oriented firms, broadly defined. This would appear to reflect the fact that park

TABLE 18

EMPLOYMENT DENSITY AND
INDUSTRIAL CLASSIFICATION

	Employment per Occupied Acre	Manufacturing & Processing Firms		% Non Manufacturing & Non Processing Firms
		Number	% of Park	
Nfld.	6.5	9	16	84
P.E.I.	10.0	16	70	30
N.S.	8.1	61	18	82
N. B.	6.1	117	33	67
Region	6.9	203	26	74

employment density is largely a function of peculiar capital-labour requirements of particular industrial sectors, rather than of broadly defined locational factors which induce firms to locate in DREE-assisted industrial parks. Manufacturing-type industries tend to be more labour intensive than service industries especially the warehousing and storage type, and P.E.I.'s parks which contain primarily manufacturers and processors, have the highest employment density.

As employment density relates, at least in part, to effective utilization of expensive park land, an attempt was made to categorize parks by employment density. Table 19 also expresses each park's employment density as a percentage of the Atlantic Region density average. While the information is most interesting, the very wide deviations in utilization density did not correlate to either the percentage of firms in the manufacturing and processing sector, nor with these firms' percentage employment. By looking at individual parks, some of the deviations could be explained by large employers i.e. pulp mill, while others appeared to be the result of land management policies. As a rule, it was observed that larger cities, probably because of scarcity of land, higher prices and future potentials, usually sold smaller lots in relation to the size of the establishment than smaller communities, which have a tendency to be more "generous" with their acreage of serviced land.

TABLE 19

EMPLOYMENT DENSITY AND PERCENTAGE
OF MANUFACTURING AND PROCESSING ACTIVITY

	No. of Parks	No. of Employees	Occupied Acres	Employment Density	% of Firms in Mfg & Proc	% of Employ. in Mfg & Proc	Park Employment Density as % of Atl. Average
NEWFOUNDLAND							
Donovan's (St. John's)		706	103	6.9	22	18	100
Grand Falls		100	22.8	4.4	0	0	64
Carbonear		0	0	0	0	0	0
Maple Valley (Corner Brook)		160	21.6	7.4	8	41	107
Gander		3	.6	5	0	0	72
TOTAL	5	969	148.0	6.5	16	20	94
PRINCE EDWARD ISLAND							
Parkdale (Charlottetown)		114	20.3	5.6	20	37	73
West Royalty (Charlottetown)		198	6	33	81	81	478
St. Eleanors (Summerside)		113	16	7.1	100	100	102
TOTAL	3	425	42.3	10	70	74	144
NOVA SCOTIA							
Point Edward (Sydney)		387	225	1.7	27	53	25
Stellarton		75	8	9.4	100	100	136
Lakeside (Halifax)		414	62	6.7	25	31	97
Burnside (Dartmouth)		3,025	281	10.8	8	24	156
Amherst		1,045	128	8.2	65	95	118
Truro		1,055	103	10.2	44	88	148
Debert (Truro)		400	72	5.6	64	97	81

TABLE 19 (Con't)

EMPLOYMENT DENSITY AND PERCENTAGE OF MANUFACTURING AND PROCESSING ACTIVITY

	No. of Parks	No. of Employees	Occupied Acres	Employment Density	% of Firms in Mfg & Proc	% of Employ. in Mfg & Proc	Park Employment Density as % of Atl. Average
Port Hawkesbury		152	30	5.1	5	3	74
Bridgewater		1,204	52	23.2	33	99	336
TOTAL	9	7,757	961	8.1	18	60	117
NEW BRUNSWICK							
MID (Moncton)		2,569	432	5.9	24	39	86
Scoudouc (Moncton)		857	150	5.7	88	99	83
Dieppe (Moncton)		423	187.4	2.3	31	29	33
Caledonia (Moncton)		318	43	7.4	21	18	107
Dorchester Cape (Moncton)		40	15	2.7	100	100	39
McAllister (Saint John)		215	11.1	19.4	33	8	281
Spruce Lake (Saint John)		184	18.5	9.9	38	46	143
Grandview (Saint John)		561	96.2	6.1	52	71	88
Sussex		296	56.1	5.3	67	93	77
Champlain (St. Andrews)		410	18	22.8	100	100	330
Fredericton		1,534	185	8.3	17	37	120
Oromocto East		88	14	6.3	66	97	91
Nackawic		669	30	22.3	46	96	323
Clair		78	34	2.3	100	100	33
St. Hilaire (Edmundston)		0	0	0	0	0	0
Grand Falls		59	16.1	3.7	66	93	54
St. Leonard		8	6	1.3	100	100	19
Woodstock		87	41	2.1	43	67	30
Hartland		39	10	3.9	50	44	57
Forestry-Bathurst		120	30	4	100	100	58
Bathurst		95	13.6	7	14	24	101
Petit-Rocher		9	1	9	100	100	130
Caraquet		6	2	3	0	0	43
Shippegan		35	11	3.2	100	100	46
Newcastle		157	21	7.5	18	13	108
Chatham		39	16	2.4	20	51	35
TOTAL	26	8,896	1,458	6.1	33	56	88
REGION TOTAL	43	18,047	2,609.3	6.9	26	56	100

LAND UTILIZATION AND INVENTORY OF LAND

Table 20 indicates that on an average annual basis industrial parks in the Atlantic Region have absorbed a total of some 375 developed acres of land per year, i.e., over the period under review industrial park firms have purchased and/or occupied about 375 acres of Atlantic Region park land per year. The average land utilization rate for each park in the Region was 8.7 acres per year. On a provincial basis, average land utilization rates per park for New Brunswick and Nova Scotia were 8.8 and 10 acres respectively while in Newfoundland, the average park sold 7.7 acres per year. The lowest land utilization rate was recorded in P.E.I. where for the average park some 5.9 developed acres per year were occupied.

In terms of the future, assuming a continuation of historical trends respecting land utilization rates in each province and on the basis that no additional industrial park acreage is developed, Atlantic Region parks can accommodate future demand for industrial park land for slightly more than six years. Newfoundland and P.E.I., the provinces with the youngest and smallest parks, have 4.9 and 2.5 years inventory of developed industrial park land respectively. In contrast, Nova Scotia has the largest reserve of developed acreage, 7.8 years to capacity and New Brunswick has sufficient park land developed to last 6.4 more years. Therefore, as might be expected, the provinces with the older and larger parks have the largest reserves of developed land.

It should be noted that the foregoing land utilization analysis has been carried out at a macro or fairly general level and to be more meaningful, it is necessary to look at developed but unoccupied acreage figures on a sub-provincial basis by park. For example, although land utilization figures at the provincial level may indicate more than sufficient land reserves for some time to come, a closer examination of acreage figures and utilization ratios for parks in a particular part of that province may identify an acute and imminent shortage of developed park land. Table 21 identifies the inventory of serviced land by park. Assuming a policy to have a five-year inventory of serviced land available, some 20 parks would appear to fall below this reserve if past trends were to continue. On the other hand, five parks would appear to have over 40 years of available land as reserves. However, three of these parks have experienced closure of their prin-

TABLE 20

LAND UTILIZATION, BY PROVINCES

	No. of Parks	Average Park Age	Total Developed Acres	Total Occupied Acres	Total Inoccupied Acres	Land Utilization Rate[1] Per Yr	Aver. Land Utilization Rate Per Year Per Park	Years* to Capacity
Nfld.	5	2.7	338	148	190	38.6	7.7	4.9
P. E. I.	3	3.2	86	42	44	17.8	5.9	2.5
N. S.	9	10.7	1668	961	707	90.6	10	7.8
N. B.	26	6.4	2915	1458	1457	228.4	8.8	6.4
Atlantic Region	43	6.7	5007	2609	2398	375.4	8.7	6.4

*Based on past trends and no additional developed acreage.

NOTE: Columns may not add due to rounding.

(1) Land utilization rates were calculated at the individual park level to avoid distortions caused by extremes.

cipal occupants, while one is a new park and the fifth has not experienced the development that was expected.

DREE INDUSTRIAL PARK ASSISTANCE

As shown in the accompanying table 22, Prince Edward Island and Newfoundland, with the smallest and youngest parks in the Atlantic Region, together have 19 per cent of the total number of parks in the Region and received some 20 per cent of DREE expenditures on parks. As might be expected, the older and much larger parks in Nova Scotia and New Brunswick absorbed the bulk of DREE's investment. New Brunswick contains 60 per cent of the total number of parks in the Region and consumed about 53 per cent of DREE expenditures on parks in the region while Nova Scotia, with 21 per cent of parks, absorbed some 27 per cent of DREE's spending.

On the basis of developed acreage, DREE spending per developed acre averaged $6,200 in Atlantic Region parks. In P.E.I., with the smallest parks, DREE expenditures per developed acre were the highest in the Region, averaging $37,200. This compares with $9,100 per developed acre in the case of Newfoundland parks and $5,000 and $5,700 in Nova Scotia and New Brunswick, respectively. Hence, DREE's costs were higher in the provinces with the fewest parks, particularly in P.E.I., reflecting construction diseconomies associated with the smaller size parks, as well as the fact that in the two other provinces, DREE was only a marginal contributor to total park spending; the opposite was true on Prince Edward Island and, to a lesser extent, in Newfoundland. Another factor influencing DREE's expenditures per acre has to do with the fact that parks in P.E.I. were funded from their beginning, especially West Royalty. In the case of Newfoundland, a large proportion of the assistance was in the form of loans under Special Areas Agreements. Nova Scotia and New Brunswick had many parks started without government assistance, while others were assisted largely by loans from Special Areas Agreements. The loan portion of assistance is not included in the table.

Of DREE's total infrastructural investment of $31 million in Atlantic Region industrial parks, DREE's expenditures

TABLE 21
LAND UTILIZATION BY PARKS

	No. of Parks	Park Age	Total Dev. Acres	Total Occ. Acres	Total Unocc. Acres	Land Util. Rate Per Year	Years to Capacity
NEWFOUNDLAND							
Donovan's (St. John's)		4.5	210	103	107	22.9	4.7
Grand Falls		2.5	60	22.8	37.2	9.1	4.1
Carbonear		1.5	14.5	0	14.5	0	N/A
Maple Valley (Corner Brook)		3.5	35.5	21.6	13.9	6.2	2.3
Gander		1.5	17.5	.6	16.9	.4	42.3
TOTAL	5	2.7*	337.5	148	189.5	38.6	4.9
PRINCE EDWARD ISLAND							
Parkdale (Charlottetown)		6.5	26	20.3	5.7	3.1	1.8
West Royalty (Charlottetown)		1.5	40	6	34	4	8.5
St. Eleanors (Summerside)		1.5	20	16	4	10.7	.4
TOTAL	3	3.2*	86	42.3	43.7	17.8	2.5
NOVA SCOTIA							
Point Edward (Sydney)		7.5	250	225	25	30	.8
Stellarton		7.5	67	8	59	1.1	55.3
Lakeside (Halifax)		12.5	71	62	9	4.9	1.8
Burnside (Dartmouth)		15.5	415	281	134	18.1	7.4
Amherst		12.5	295	128	167	10.2	16.3
Truro		14.5	105	103	2	7.1	.3
Debert (Truro)		6.5	300	72	228	11.1	20.6
Port Hawkesbury		8.5	68	30	38	3.5	10.8
Bridgewater		11.5	97	52	45	4.5	10
TOTAL	9	10.7*	1,668	961	707	90.6	7.8
NEW BRUNSWICK							
MID (Moncton)		16.5	600	432	168	26.2	6.4
Scoudouc (Moncton)		9.5	200	150	50	15.8	3.2
Dieppe (Moncton)		2.5	300	187.4	112.6	74.9	1.5
Caledonia (Moncton)		4.5	57.5	43	14.5	9.6	1.5
Dorchester Cape (Moncton)		10.5	234	15	219	1.4	153.3
McAllister (Saint John)		3.5	70	11.1	58.9	3.2	18.6
Spruce Lake (Saint John)		3.5	235	18.5	216.5	5.3	41.0
Grandview (Saint John)		8.5	100	96.2	3.8	11.3	.3
Sussex		12.5	66.4	56.1	10.3	4.5	2.3
Champlain (St. Andrews)		7.5	70	18	52	2.4	21.7
Fredericton		17.5	200	185	15	10.6	1.4
Oromocto East		1.5	40	14	26	9.3	2.8
Nackawic		6.5	45	30	15	4.6	3.3
Clair		7.5	50	34	16	4.5	3.5
St. Hilaire (Edmundston)		.5	0	0	0	0	N/A
Grand Falls		4.5	63	16.1	46.9	3.6	13.1
St. Leonard		1.5	25	6	19	4	4.8
Woodstock		9.5	100	41	59	4.3	13.7
Hartland		16.5	12	10	2	.6	3.3
Forestry-Bathurst		2.5	200	30	170	12	14.2
Bathurst		4.5	52	13.6	38.4	3	12.7
Petit-Rocher		.5	12	1	11	2	5.5
Caraquet		3.5	66	2	64	.6	112.0
Shippegan		1.5	17.5	11	6.5	7.3	.9
Newcastle		5.5	50	21	29	3.8	7.6
Chatham		4.5	50	16	34	3.6	9.6
TOTAL	26	6.4*	2,915.4	1,458	1,457.4	228.4	6.4
REGION TOTAL	43	6.7*	5,006.9	2,609.3	2,397.6	375.4	6.4

* Average

TABLE 22

DREE INFRASTRUCTURAL EXPENDITURES BY PROVINCE

	No. of Parks	% of Total Parks	DREE-Park Expenditures (Millions $)	% of DREE Expenditures	DREE Expenditures Per Developed Acres ($000's)
Nfld.	5	12	3.1	10.0	9.1
P. E.I.	3	7	3.2	10.3	37.2
N. S.	9	21	8.3	26.7	5.0
N. B.	26	60	16.5	53.1	5.7
Atlantic Region	43	100	31.1	100.0	6.2

NOTE: Columns may not add due to rounding

exceeded $1 million in 11 of the 43 DREE-funded parks, seven of which were in New Brunswick. In fact, the 11 parks together represented about one-quarter of the total number of DREE-funded parks and accounted for $22.3 million or almost three-quarters of DREE's total industrial park investment in the Atlantic.

Table 23 contains the data displayed by expenditure over one million dollars and below one million dollars. In the first category, the 11 parks contained 52 per cent of the total developed acres, 52 per cent of total occupied acres, 45 per cent of total employment and 62 per cent of total number of firms. On the average, these parks contained 43 firms per park, as compared to nine for the "less than a million" category, but the average employment was only 17 per firm, compared to 34 for the second category. The utilization ratio was about the same for both categories of park.

The remaining 32 DREE-funded parks, 19 of which were in New Brunswick, received $8.8 million of DREE's expenditures. These 32 parks were significantly smaller in size, averaging 75 developed acres (compared to 237 acres for the first category) and had less than nine firms per park. As indicated in the table, on the average, firms in these parks were twice as labour intensive as the occupants of the "over a million" category (34 versus 17 employees). However, park employment averaged only 302 (compared to 744 for the first category) and in total the 32 parks accounted for less than 55 per cent of total job creation in the 43 DREE-assisted parks.

In brief, the group of 11 parks which represented about 25 per cent of the total number of DREE-funded parks,

TABLE 23

DREE INDUSTRIAL PARK EXPENDITURES BY SPECIAL GROUPING

	No. of Parks $1M + DREE Expend. for Infra.	Total DREE Expend.	Total Developed Acres	Total Occupied Acres	Total Employment	Total No. of Firms	Average No. of Firms Per Park	Average Employment Per Firm	Utilization Ratio
Nfld.	1	1,933.7	210	103	706	36	36	20	49.0
P. E. I.	1	2,403.3	40	6	198	16	16	12	15.0
N. S.	2	5,783.1	665	506	3,412	248	124	14	76.1
N. B.	7	12,181.5	1,696.5	737	3,869	177	25	22	43.4
A. R.	11	22,301.6	2,611.5	1,352	8,185	477	43	17	51.8
	No. of Parks Less $1M DREE Expend. for Infra.								
Nfld.	4	1,128.5	127.5	45	263	20	5	13.2	35.3
P. E. I.	2	791.9	46	36.3	227	7	3.5	32.4	78.9
N. S.	7	2,501.8	1,003	455	4,345	86	12	50.5	45.4
N. B.	19	4,335.2	1,218.9	721	5,027	179	9	28.1	59.2
A. R.	32	8,757.4	2,395.4	1,257.3	9,862	292	9	33.8	52.5
Total	43	31,059.0	5,006.9	2,609.3	18,047	769	18	23	52

accounted for almost 75 per cent of total DREE industrial park assistance, were slightly older than the other parks, and much larger in terms of developed acres and number of firms. While firms in parks which received the largest share of DREE assistance were half as labour intensive, these parks averaged more than twice the number of employees and, therefore, accounted for some 45 per cent of total job creation reported in all DREE-assisted parks.

Table 2 (page 12) had reported that in addition to the $31 million of government "grant" assistance, 11 of these parks had also received some $17.5 million in loan assistance. As the loans are repayable, with interest, these amounts have not been included as assistance. While the loans were very instrumental in getting the parks underway, the repayments have caused financial problems, especially when the park is municipally owned. Acreage is required to be sold to raise the payments, with interest on these loans, and this tends to a less discriminating use of park land.

SECTION II — B

ANALYSIS OF PARK CHARACTERISTICS AND COMMUNITIES

In the study thus far, the analysis focussed on the characteristics of the industrial parks, independent of the communities in which they were located. As it is well accepted that communities, and their characteristics do in fact influence the performance of industrial parks, this part of the analysis looks at correlations between park's performance and communities.

COMMUNITY SIZE AND PARK PERFORMANCE

The population of the community in which the industrial park is located or associated with is one of the factors

thought to influence the level of park utilization. The hypothesis that parks located in more populated communities would be more fully utilized than parks located in less populous communities was examined. It was hypothesized that larger communities with their larger markets, labour forces, more highly developed infrastructures, and diverse industrial bases, would be more attractive to new industry to locate in their industrial parks.

To test the hypothesis, the 43 DREE-funded parks were stratified according to three categories of communities using 1976 population — those under 25,000, those between 25,000 and 100,000 and those communities over 100,000. In addition to utilization, other park characteristics were examined, including their average number of developed acres, their average number of park occupants and average park employment. These characteristics are presented in table 24.

As anticipated, the smallest parks are located in the least populous communities while the largest parks tend to be situated in the larger communities. Over half of the parks, 23 of 43, are located in the smallest communities, those with less than 25,000 inhabitants, and these parks averaged 73 developed acres in size. The largest communities, those with populations exceeding 100,000 inhabitants, contained 7 parks and they were the largest in terms of developed acres, averaging 193 acres each. The remaining 13 parks, or about one-quarter of the 43 DREE-assisted parks, averaged 152 developed acres, and they were located in, or adjacent to, medium-size communities, those with populations between 25,000 and 100,000.

The variations in the other three characteristics displayed in the table demonstrate further the consistent and positive relationship identified between community size and park size. The smallest category of community size contains not only the smallest parks in terms of developed acres, but these parks also tend to average significantly fewer occupants, and less employment compared to the two categories of communities with populations over 25,000 and over 100,000 inhabitants. Most importantly, while the parks in the smallest communities were, on average, only about one-third occupied, the 20 parks in the two categories of more highly populated communities averaged about 60 per cent occupancy. Hence, the larger parks in the more populated communities experienced higher levels of utilization than the smaller parks in the less populated communities.

TABLE 24

Industrial Parks and Community Sizes

1976 Community Population	No. of Comm.	No. of Parks	Average Developed Acres Per Park	Average Park Occupants	Average Park Employ.	Average Utilization Ratio
Under 25,000	23	23	73	6	167	33
25,000-100,000	9	13	152	23	671	63
over 100,000	4	7	193	48	785	59
Totals and Averages	35	43	116.4	17.8	420	52

COMMUNITY SIZE AND LAND COST

Larger communities which tend to have better performing and larger parks, also have higher absolute levels of government assistance to their parks. Table 25 indicates that in the under 25,000 population category of communities, the 23 parks (53 per cent of parks) received $7,139,000, or 23 per cent of the assistance. The mid-size communities had 30 per cent of the parks, and had received 36 per cent of the assistance. The larger communities, while having 16 per cent of the parks, had received 41 per cent of the assistance.

TABLE 25

Cost Variance of Land, by Community Size

1976 Community Population	No. of Parks	Total Dev. Acres	Industrial Park Assistance 000 of $	DREE-Assistance Per Park 000 of $	DREE-Assistance Per Acre $
Under 25,000	23	1676	7,139	310	4,260
25,000-100,000	13	1980	11,087	853	5,599
over 100,000	7	1351	12,833	1,833	9,499
Totals	43	5007	31,059	722	6,203

The distribution of assistance, on a per acre basis, is higher for larger cities, reflecting the higher cost for serviced industrial land and the higher level of service provided to these parks. In many of the smaller communities, industrial parks were assisted to a lesser degree by government(s) as they were in operation before DREE's inception.

When looking at the infrastructure assistance on a per job basis[1], the funding represents $606 per job in the smaller communities, $800 in the mid-size communities and $1,378 in the larger cities.

SELECTION OF CRITERIA AND MEASUREMENT OF PARK PERFORMANCE

It has been shown in other sections that the overall performance of industrial parks, i.e. their ability to attract firms, has generally been good. However, the performance, as might be expected, varies from one park to the next. Unquestionably, a number of factors, some quantifiable, others not, influenced the performance of parks. The relationship between park performance and several important socio-demographic and economic factors as presented in table 26 were examined. More specifically, the following factors were examined: the size of communities in which parks are located and their growth, the availability of labour, its cost and quality, the economic structure of these communities, the availability of high order business services and the availability of retail facilities to service consumers. Finally, a time variable has been added, namely the age of industrial parks.

(1) Using the same proportion of infrastructure expenditure as the average utilization ratio of these parks.

A number of performance indicators (employment generated, employment generated per year per 10,000 population, the number of firms, the number of acres occupied and the number of acres occupied as a proportion of total acres developed) have been consecutively compared[1] with the following community characteristics: size of population, labour force participation rate (labour availability indicator), earned income per capita (cost of labour indicator), the proportion of population five years of age and over with grade 9 education or better (labour quality indicator), the proportion of labour force in the service sector (economic structure indicator), the business service score (an indicator of high order services) and the retail facilities score. The age of the park was tested as an explanatory factor for park success. In other words, it is assumed that the success of industrial parks, as defined above, is a function of or is related to these latter indicators.

The comparison did not provide any surprising results. As was expected the age of parks was highly matched to employment, the number of occupied acres and the number of firms located in industrial parks. The size of communities in which the parks are located was also a significant explanatory factor for the number of jobs created in industrial parks and the number of firms. There was also a significant association between the number of acres occupied, the utilization ratio, with the level of retail services available in the community in which the parks are located. Finally, the number of jobs created per year per 10,000 population was positively related to the participation rate or availability of labour. The cost and quality of labour, the structure of the economy and the availability of high order services did not appear to bear upon park performance.

Unfortunately, there are a number of locational factors not addressed. These include distance to supplies and markets and availability of transportation facilities, cost of land and real property tax, local attitudes and commitment to industrial developments, energy costs, productivity and stability of the labour force and subjective "quality of life" attributes. Undoubtedly, some of these factors weigh heavily in industrial location decisions and more research in these areas could be undertaken.

(1) Using the multiple regression technique.

TABLE 26

PARKS CHARACTERISTICS RELATED TO UTILIZATION OF LAND AND EMPLOYMENT

Park Name	Age	Occupied Acres	Number Firms	Employment	Util. Ration (%)	Land Util. Rate Per Year	Employment Creation Per Year	Community Population (1976) (1)	Land Absorption Per Year Per 10k People	Employ. Absorption Per Year Per 10k People Per Year
NEWFOUNDLAND										
Donovan's	4.5	103	36	706	49	22.9	156.9	138,007	1.7	11.4
Grand Falls	2.5	22.8	6	100	38	9.1	40.0	17,165	5.3	23.3
Carbonear	1.5	0	0	0	0	0	0	12,400	0	0
Maple Valley	3.5	21.6	13	160	61	6.2	45.7	25,185	2.5	18.1
Gander	1.5	.6	1	3	3	0.4	2.0	10,219	0.4	2.0
TOTAL	2.7	148.0	56	969	44	38.6	244.6	202,976	1.9	12.1
PRINCE EDWARD ISLAND										
Parkdale	6.5	20.3	5	114	78	7.1	149.5	27,500	2.6	54.4
West Royalty	1.5	6	16	198	15					
St. Eleanors	1.5	16	2	113	80	10.7	75.3	15,328	7.0	49.1
TOTAL	3.2	42.3	23	425	49	17.8	224.8	42,828	4.2	52.5
NOVA SCOTIA										
Point Edward	7.5	225	26	387	90	30	51.6	123,422	2.4	4.2
Stellarton	7.5	8	2	75	12	1.1	10.0	33,839	0.3	3.0
Lakeside	12.5	62	12	414	87	23.1	228.3	263,256	0.9	8.7
Burnside	15.5	281	222	3,025	68					
Amherst	12.5	128	20	1,045	43	10.2	83.6	16,035	6.4	52.1
Truro	14.5	103	18	1,055	98	7.1	72.8	37,220	1.9	19.6
Debert	6.5	72	11	400	24	11.1	61.5	16,217	6.8	37.9
Port Hawkesbury	8.5	30	20	152	44	3.5	17.9	14,539	2.4	12.3
Bridgewater	11.5	52	3	1,204	54	4.5	104.7	32,295	1.4	32.4
TOTAL	10.7	961	334	7,757	58	90.6	630.4	523,983*	1.7	12.0

NEW BRUNSWICK

MID (Moncton)	16.5	432	121	2,569	72					
Dieppe	2.5	187.4	29	423	62	110.7	395.6	76,110	14.6	52.0
Caledonia	4.5	43	14	318	75					
Scoudouc	9.5	150	8	857	75	15.8	90.2	72,957	2.2	12.4
Dorchester Cape	10.5	15	1	40	6	1.4	3.8	13,449	1.0	2.8
McAllister	3.5	11.1	3	215	16					
Spruce Lake	3.5	18.5	8	184	8	19.8	180.0	112,639	1.8	16.0
Grandview	8.5	96.2	29	561	96					
Sussex	12.5	56.1	12	296	84	4.5	23.7	11,972	3.8	19.8
Champlain	7.5	18	2	410	26	2.4	54.7	11,266	2.1	48.6
Fredericton	17.5	185	59	1,534	93	10.6	87.7	44,285	2.4	19.8
Oromocton East	1.5	14	3	88	35	9.3	58.7	13,829	6.7	42.4
Nackawic	6.5	30	13	669	67	4.6	102.9	4,290	10.7	239.9
Clair	7.5	34	4	78	68	4.5	10.4	3,709	12.1	28.0
St. Hilaire	.5	0	0	0	0	0	0	21,542	0	0
Grand Falls	4.5	16.1	3	59	26	3.6	13.1	11,879	3.0	11.0
St. Leonard	1.5	6	1	8	24	4.0	5.3	4,312	9.3	12.3
Woodstock	9.5	41	7	87	41	4.3	9.2	8,440	5.1	10.9
Hartland	16.5	10	6	39	83	0.6	2.4	10,220	0.6	2.3
Forestry-Bathurst	2.5	30	1	120	15	15.0	69.1	35,745	4.2	19.3
Bathurst	4.5	13.6	7	95	26					
Petit-Rocher	.5	1	1	9	8	2.0	18.0	12,382	1.6	14.5
Caraquet	3.5	2	1	6	3	0.6	1.7	15,915	0.4	1.1
Shippegan	1.5	11	1	35	63	7.3	23.3	15,647	4.7	14.9
Newcastle	5.5	21	17	157	42	3.8	28.5	12,930	2.9	22.0
Chatham	4.5	16	5	39	32	3.6	8.7	13,002	2.8	6.7
TOTAL	6.4	1,458.0	356	8,896	50	228.4	1,187.0	445,565*	5.1	26.6
REGIONAL TOTAL	6.7	2,609.3	769	18,047	52	375.4	2,286.8	1,215,352	3.1	18.8

Notes: (1) Estimated population of community labour-shed area.

The total population does not add up because some duplicated populations were removed for the communities of Debert, Scoudouc and Petit-Rocher.

CONCLUSIONS

The objectives of this study were stated as

(a) to establish a reliable data bank, and
(b) to determine the impact of industrial parks on job creation and incomes.

DATA BANK

The first objective of establishing a reliable data bank has been met, but as in the case of any dynamic situation, the data very quickly gets "dated". While the data bank is considered very reliable as of December 31, 1976, it will require regular updating, preferably on an annual basis.

IMPACT

The second objective was to determine the impact of industrial parks on the economy in general, and specifically on job creation and increased incomes. The following summary of major findings deals with this objective.

Firms and employment — As of December 31, 1976, there were 769 operational firms, generating 18,047 man-years of employment, in the parks. These jobs generated an estimated $178 million in wages and salaries in 1976.

Incremental versus relocated firms — Some 68 per cent of all firms in industrial parks are deemed to represent incremental activities to the region, while 32 per cent were relocated firms. The incremental employment was 75 per cent of the total man-years of employment associated with the parks.

The relocated firms represent the freeing of 768 acres of land, most of which would be considered prime urban land.

Size and age of parks — The 43 DREE-assisted industrial parks are on average 6.7 years of age and 116 acres in size. A relationship was shown to exist between age and size, i.e., the older parks in the region tend to be the larger ones.

Utilization — Of the total of about 5,000 acres of developed land, some 2,600 acres were occupied, a utilization ratio of 52 per cent. There was also a definite relation between age of parks and utilization ratio, where the older parks tend to be more extensively utilized. The higher utilization ratios were

also related to larger parks, which were in turn related to larger communities.

Employment density — For the region as a whole, each occupied acre of land had an average of 6.9 associated employees. The density increases with the percentage of the manufacturing and processing sector.

Type of firms — As of the end of 1976, 42 per cent of the firms were in trade, 26 per cent in manufacturing and processing, 11 per cent in transportation, communications and utilities, 8 per cent in construction and 12 per cent in others such as finance, insurance, real estate, community, business and personal services and public administration.

Manufacturing and processing sector — The distribution of firms indicates a considerable diversification pattern and a concentration of higher value activities in industrial parks than outside the parks. Some 54 per cent of that sector's firms were RDIP assisted, representing 69 per cent of the employment in the manufacturing and processing activities.

Markets and transportation modes — A full 89 per cent of all firms located in industrial parks had their major markets either in the province in which they were established, or in the Atlantic Region. The major mode of transport was road at 95 per cent of all firms for which transportation was applicable. In the manufacturing and processing sector, 30 per cent of the firms had their major markets outside the Atlantic Region.

Land utilization and inventory of land — On the average there are 375 acres of serviced industrial land consumed per year. Assuming a continuation of historical trends, and on the basis that no further industrial land is developed, an adequate serviced land bank exists to handle the demand for the next six years on a broad regional basis. By province, Prince Edward Island has 2.5 years of available land, Newfoundland has 4.9 years, New Brunswick, 6.4 years and Nova Scotia 7.8 years. By park, there is a wide deviation from the averages, as 20 parks have less than a five-year serviced land availability and five parks have over 40 years reserves.

DREE industrial park expenditures — The $31 million of assistance was received by the provinces in roughly the same proportions as the percentage of parks. On the average, $6,200 per developed acre was invested by the government. About

75 per cent of all DREE assistance went to 11 parks, which each received over $1 million.

Community size and park performance — When the 43 industrial parks are stratified according to community size, a clear relationship is demonstrated between park performance and community size.

Community size and cost of serviced land — There is a relationship between cost of park and community size, as the largest and more expensive parks are generally located in larger communities. The cost per developed acre is equally higher in the larger communities. However, on a per man-year of employment basis, the funding represents $606 per job in the smaller communities, $800 in the mid-size communities and $1,378 in the larger communities.