

**The Economic Impacts of
Multiple Self-Help
Housing In Canada**

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prepared by:

ARC

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for:

**Canadian Housing and
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on behalf of:

**Canada Mortgage and
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NOTE: LE RÉSUMÉ EN FRANÇAIS SUIT IMMÉDIATEMENT LE RÉSUMÉ EN ANGLAIS.

EXECUTIVE SUMMARY

This report assesses the economic and fiscal impacts which would result from the creation of multiple self-help housing to address the need for affordable housing. Working from two assumptions - that, in a time of fiscal restraint, governments can still do much to contribute to the development of needed housing without incurring ongoing subsidy costs and that low income households are not presently engaged in self-help housing but could be encouraged to do so, this report attempts to set out the likely benefits to government in revenues and in the achievement of public policy objectives which self-help housing could generate. The basic assumptions underlying this study are that low income households in Canada are not currently being adequately housed and that private market housing cannot meet these needs, in part because of the costs of construction.

It has been shown that self-help can significantly reduce the costs, and may bring it within reach of those in need. These lead to the suggestion that multiple self-help housing by low and moderate income households could generate benefits to government, since such housing is not currently being produced. It is estimated that, for every \$1 Million spent on multiple housing in Canada, the federal and provincial governments receive over \$210,000 in revenue from income taxes paid on labour and provincial and federal sales taxes on materials. Additional corporate income taxes are generated and municipalities realize both development charges and property taxes on the resulting 15 units of housing.

Should governments act to encourage multiple self-help housing for low and moderate income households, the same expenditure is estimated to generate over \$237,000 in federal and provincial government revenues, again with other corporate taxes, development charges and property taxes being generated. The \$1 Million in expenditures would result in the creation of 23 units of needed housing. It has been estimated elsewhere that this results in the creation of up to 30 person years of direct and indirect employment.

RÉSUMÉ

Le rapport présente une évaluation des répercussions économiques et financières qu'entraîne la production de logements collectifs au moyen de l'autoconstruction afin de répondre aux besoins de logements à prix abordable. Dans le rapport qui est fondé sur deux hypothèses, à savoir que malgré les restrictions budgétaires, les gouvernements peuvent trouver bien des façons de faciliter la création de logements dont on a grand besoin sans recourir aux subventions continues et que les ménages à faible revenu ne s'engagent pas dans l'autoconstruction de logements collectifs à l'heure actuelle, mais pourraient être encouragés à le faire, on tente de faire ressortir les avantages que pourrait représenter l'autoconstruction pour le gouvernement sur le plan des recettes et de l'atteinte des objectifs de politique gouvernementale. Au départ, l'étude se fonde sur deux hypothèses, soit le fait que les ménages à faible revenu ne parviennent pas actuellement à trouver un logement de qualité convenable au Canada et que le logement du marché privé ne répond pas à leurs besoins, notamment en raison du coût de construction des habitations.

Il a été démontré que l'autoconstruction permettrait de réduire considérablement les coûts et de rendre les logements accessibles aux ménages dans le besoin. L'autoconstruction de logements collectifs par les ménages à revenu faible et moyen pourrait également procurer des avantages au gouvernement, étant donné que ce genre d'habitation n'est pas encore produit. On estime que pour chaque million de dollars dépensé au Canada pour produire des logements collectifs, les gouvernements fédéral et provinciaux pourraient recevoir des recettes de 210 000 \$ provenant de l'impôt sur le revenu des travailleurs, des taxes provinciales et fédérales sur la vente des matériaux, de l'impôt sur le revenu des sociétés ainsi que des droits d'aménagement et de l'impôt foncier prélevés par les municipalités sur les quinze logements autoconstruits.

Si les gouvernements décidaient d'encourager l'autoconstruction de logements collectifs auprès des ménages à revenu faible et moyen, les mêmes dépenses permettraient de générer plus de 153 000 \$ en recettes fédérales et provinciales, en plus de l'impôt sur les sociétés, des droits d'aménagement et de l'impôt foncier. Les dépenses de un million de dollars résulteraient en la création de 23 logements dont on a grand besoin. D'autres études estiment que cette initiative pourrait se traduire par la création d'emplois directs et indirects correspondant jusqu'à 30 années-personnes.

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Table of Contents

INTRODUCTION	1
SOURCES AND METHODOLOGY	2
Overview of Methodology	2
Description of the Methodology	3
THE RESULTS	11
What is the Value of Construction in Each Sector?	12
What is Value of Labour and Materials in Each Sector?	12
How much Government Revenue was Generated by Self-Provision Housing?	13
APPLICATION OF THE FINDINGS	14
Estimates of Per Unit Expenditures for Low Density Multiple Dwellings	14
Estimates of Tax Revenues from Low Density Multiple Construction	16
Summary and Conclusions	18

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List of Tables

Table 1: Self-Provision Housing Provision in CMAs, 1985-1989	4
Table 2: Mean Percentage of Labour Purchased in the self-provision housing sector, by province, 1985-1989	6
Table 3: Percent of Labour Purchased, Newfoundland, 1993	7
Table 4: Effective Income tax rates by Province, 1989 and 1991	8
Table 5: Calculation of Revenue Generated through Taxation, Newfoundland, 1993	8
Table 6: Overview of Estimated Labour, Materials and Taxation Expenditures by Sector, Canada, 1993	11
Table 7: Percentage Breakdown of Expenditures by Sector	11
Table 8: Value of Residential Construction Sectors by Region, 1993	12
Table 9: Expenditures on Labour and Materials for Residential Single-Detached Construction, by Construction Sector, 1993	13
Table 10: Government Revenues Generated by Residential Housing Construction, by Sector, 1993	13
Table 11: Average Cost of Multiple Units by Province, 1993	14
Table 12: Per Unit Labour and Materials Estimates for Multiple housing by Province, 1993	15
Table 13: Labour and Material Expenditure per \$1 Million in Contracted and Self-help Multiple Housing	16
Table 14: Government Revenue generated through \$1 Million in Contracted Multiple Construction, by Province, 1993.*	17
Table 15: Hypothetical Government Revenue generated through \$1 Million in Self-help Multiple Construction, by Province	17

INTRODUCTION

The purpose of this report is to assess the economic and fiscal impacts which would result from the creation of multiple self-help housing to address the need for affordable housing. Working from two assumptions - that, in a time of fiscal restraint, governments can still do much to contribute to the development of needed housing without incurring ongoing subsidy costs and that low income households are not presently engaged in self-help housing but could be encouraged to do so - this report attempts to set out the likely benefits to government in revenues and in the achievement of public policy objectives which self-help housing could generate.

Of particular interest are the labour and material purchases involved, the resulting job and tax revenue generation and the amount of affordable housing which could be produced. Self-help housing is taken here to be that in which the first occupants of a house arrange for the building of their own dwelling and, in various ways, participate in its production¹. The self-help concept as applied to multiple housing could also involve the acquisition and renovation of existing rental housing. Rehabilitation work is much more labour intensive than new construction and the estimates produced herein would be conservative if applied to renovation self-help.

While self-help housing accounts for a significant proportion of Canadian housing production, this is largely limited to the production of single detached homes by households at all income levels. The motivation behind this study is that low and moderate income groups can contribute through self-help to achieving their own affordable housing in urban core areas, provided appropriate encouragement and supports from government, such as promotional and educational materials, training and skill development, expert guidance, small start-up grants or loans and mortgage insurance underwriting assistance.

The economic and fiscal impacts we project are the pay-backs to government of encouraging housing which is not being developed today. Our methodology is somewhat complex and draws on data from various sources, largely drawn from the available data on self-provisioned housing in Canada as it relates to single detached housing. While there may be differences in the characteristics of those producing this housing today and those the assessment is intended to apply to, but there is no evidence of any difference in relevant skill levels.

We begin this report by outlining the various steps used in our calculations. Next we explain these steps in detail and provide the rationale behind the approach and the assumptions used. We then present the results of these calculations by region for 1993. Provincial results for other years are available in the appendices for each calculation. All values reported are in thousands of dollars unless otherwise stated. The final section of the report applies the findings to develop estimates of the economic and fiscal impacts of the production of multiple housing through self-help.

¹ S.S. Duncan and A. Rowe, "Self-provided Housing: The First World's Hidden Housing Arm", *Urban Studies*, 30:8 (1993): 1331-1354.

SOURCES AND METHODOLOGY

We use several different data sources in order to estimate the economic impacts of self-provided housing construction. These sources include survey data from a 1989 Environics study of home-owners, and several Statistics Canada publications and data sets, including *Construction in Canada* data, *Building permits* data and taxation data. We have tried to use all available sources to come up with the most accurate estimates possible, but as we point out in presenting our results, the values given are still estimates.

Overview of Methodology

Our starting point is with the value of new residential single-detached building starts by province and year. These values are obtained from Statistics Canada's monthly *Building Permits* publication. The following steps are used to sort out the value of labour and materials purchased by each sector and the amount of government revenue generated on these amounts through taxation.

♦ Step 1 - Calculation of Value of New Residential Construction by Sector

Among other things, the HOMES survey asked original occupants of homes about the construction of their house. From this survey percentages of homeowners who self-built and who self-promoted the construction of their home can be assessed. These percentages are then applied to the values of new residential single-detached construction for each province and year.

♦ Step 2 - Calculation of Labour and Materials proportions

From the Investment and Capital Stock Division of Statistics Canada we obtained a breakdown of the ratio of labour and materials expenditures for new construction. These proportions are then applied to the value of single-detached construction by sector to obtain estimates of the value of new residential construction in each sector.

♦ Step 3 - Calculation of proportion of Labour Purchased by Sector

The next thing that needs to be sorted out is the amount of labour that is purchased in each sector. The percentage of labour purchased by respondents was measured in the HOME survey. This allows for a basis to calculate the value of labour purchased in each of the different housing sectors.

♦ Step 4 - Calculation of Revenue Generated from Taxation

Another important economic impact of the construction industry is the amount of government revenue generated. Using Provincial Sales tax (PST) rates and the federal Goods and Service effective tax rate we calculate the amount generated through these two types of sales tax on the amount spent on materials by sector. Using Statistics Canada data on personal income tax collected by province we calculate the average effective tax rate for each province. This information is then applied to calculate the amount of income tax generated on the wages paid for each sector.

Description of the Methodology

♦ Step 1 - Calculation of Value of New Residential Construction by Sector

EnviroNics HOMEs survey respondents were asked whether or not they were involved in certain tasks of building their home.² If family members did not organize the trades and also did not do one or more of getting the land, planning the project or organizing/providing the materials, then the construction is defined as contract. Self-provision construction is defined as either self-promotion or self-building of the home. If family members arranged to have the trades done *and* did some of the labour, then the construction is defined as self-build. Construction is also defined as self-build if members of the family did 25 percent or more of the labour themselves, even if they did not organize the trades. All construction that does not fit either the contract or self-build definitions is defined as self-promotion.

Using these definitions, the first step is to calculate the proportion of new residential housing construction for each type of construction, that is for Contract, Self-Promote and Self-Build. This is done by using the mean percentages of construction sector from the HOME study by province for the 1985 to 1989 period. Table 1 shows these results.

As well as the contract and self-provision totals, the breakdown of self-promote and self-build construction is also given. As Table 1 shows, the percentage of self-provision construction is higher in Newfoundland and the Maritime provinces and lower in Ontario and Western Canada.

The percentages reported in Table 1 serve as the basis for calculating the value of new residential single-detached housing construction by sector. Using these construction sector percentages, the value of self-provision housing is estimated from the *Building Permit* data for 1989, 1991 and 1993.³ An example of this calculation is show below. It is important to emphasize that the survey sample was drawn only from Census Metropolitan Areas (CMAs). Research shows that self-provision construction rates are higher in rural areas than in urban ones.⁴ This means that our estimate presented in the next section based on these percentages will be a conservative one. It is also important to note that there are low numbers of respondents for some provinces, particularly Newfoundland and P.E.I.

² The question was "Which, if any, of the following did you or a member of your household take part in for your house? Obtaining land, Planning of project, Obtaining of approvals/permits, Organizing financial tasks, Organization/provision of material, Organization of trades, Personally provided physical labour (if provided physical labour, What percentage of the labour was that?"

³ We also calculated these values for 1987 but do not use them here because of poor coverage in rural areas by the building permit data.

⁴ For example, Rowe (1983) found in a P.E.I case study that while 66 percent of all new construction was self-help, 59.5 percent of urban starts were self-help. Skiburskis (1981) found that half the housing starts in rural subdivisions in British Columbia were self-help (appear to be self-build) whereas the percentage for British Columbia as a whole is less than 30 percent.

Table 1: Self-Provision Housing Provision in CMAs, 1985-1989

Province	Contract	Self-Provision			N
		Self-Promote %	Self-build %	Total %	
Newfoundland	38.4	23.1	38.5	61.6	26
P.E.I.	26.9	34.6	38.5	73.1	26
Nova Scotia	41.1	8.9	50.0	58.9	56
New Brunswick	59.1	16.7	24.2	40.9	66
Quebec	58.6	10.0	31.4	41.4	280
Ontario	77.1	7.3	15.6	22.9	411
Manitoba	81.5	10.8	7.7	18.5	65
Saskatchewan	62.8	10.3	26.9	37.2	78
Alberta	68.4	11.0	20.6	31.6	155
British Columbia	73.3	6.5	20.2	26.7	124
CANADA	66.7	10.0	23.2	33.2	1287

Source: Environics HOMES survey

The percentages reported in Table 1 serve as the basis for calculating the value of new residential single-detached housing construction by sector. Using these construction sector percentages, the value of self-provision housing is estimated from the *Building Permit* data for 1989, 1991 and 1993.⁵ An example of this calculation is show below. It is important to emphasize that the survey sample was drawn only from Census Metropolitan Areas (CMAs). Research shows that self-provision construction rates are higher in rural areas than in urban ones.⁶ This means that our estimate presented in the next section based on these percentages will be a conservative one. It is also important to note that there are low numbers of respondents for some provinces, particularly Newfoundland and P.E.I.

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Example of step 1 calculation:

New Residential Construction for Canada, 1993

Total Single-Detached Building Permit Value = \$9,568,195 thousand
(from Statistics Canada's Building permits)

Total Contract amount = 66.7 percent of \$9,568,195 thousand = \$6,381,986
(percentages from Table 1)

Total Self-provision amount = 33.2 percent of \$9,568,195 = \$3,176,641

Total Self-build amount = 23.2 percent of \$9,568,195 thousand = \$2,219,821

Total Self-promote amount = 10.0 percent of \$9,568,195 thousand = \$956,820

♦ **Assumptions**

The percentages reported in Table 1 and Table 2 were collected for respondents who moved into their new home between 1985 and 1989. These proportions are used in our analysis for more recent years. We do not feel that this is a serious limitation to the accuracy of the estimates because there is no reason to expect that either the percentage of self-provision construction or the percentage of labour purchased by the self-provision sector will have changed much over the last decade.⁷ As already mentioned, the survey sample on which these percentages are based included only CMAs and therefore our estimates are lower than the actual values.

We also assume that the values reported in the Building Permits data include the full market cost of labour. We recognise that this assumption is closer to reality in CMAs than in rural areas.

Finally, only single-detached dwellings (SDDs) are included in the values used here. We have assumed that all self-provided housing is single-detached and therefore we have used values for this kind of construction alone. We recognize that this assumption does not hold true in all cases. It is also important to keep in mind that as with the self-provided amount, the contract amounts are also based only on single-detached construction.

♦ **Step 2 - Calculation of Labour and Materials amounts**

From the Investment and Capital Stock Division of Statistics Canada we obtained a breakdown of the ratio of labour and materials expenditures for new construction.⁸ This ratio was calculated by Statistics Canada from contractor censuses. The ratio given was the same for each year and province and did not differ for contract and "own-account" residential construction. This information, combined with the survey, data gives us the proportions for calculating the labour and material amounts purchased for new residential construction.

⁷ While there is no direct evidence for this assumption, other sources do not contradict it. For example, Rowe (1981) did not find much difference in self-help provision rates between 1978 and 1981.

⁸ The ratio is 35.8 percent labour and 64.2 percent materials. We obtained a similar ratio of Brian Gray of the Research division of CMHC.

Example of step 2 Calculation:

Labour and Materials expenditures for New Single-detached
Residential Construction, Canada 1993
(from Step 1)

	Value of New	Materials		Labour	
	SDD Construction	%	Value	%	Value
Contract	\$6,381,986	64.2	\$4,097,235	35.8	\$2,284,751
Self-provide	\$3,176,641	64.2	\$2,039,404	35.8	\$1,137,238
Self-promote	\$956,820	64.2	\$614,278	35.8	\$342,542
Self-build	\$2,219,821	64.2	\$1,425,125	35.8	\$794,696

♦ Step 3 - Calculation of proportion of Labour Purchased by Sector

The percentage of labour purchased by respondents was also measured in the HOME survey. This provides for a basis to calculate the value of labour purchased in each of the different housing sectors. As Table 2 shows, the mean percentage of labour purchased from 1984-1989 is quite high in all categories. Interestingly, the percentage of labour purchased in the self-promotion category is not that different from the contract category. This is consistent with the findings of Rowe (1983) and Bishop (1985).

Table 2: Mean Percentage of Labour Purchased in the self-provision housing sector, by province, 1985-1989.

Province	Contract	Self-promote	Self-build	Total Self-Provision
Newfoundland	95.5	100.0	49.0	68.1
P.E.I.	100.0	98.9	41.7	68.8
Nova Scotia	90.4	100.0	37.1	47.2
New Brunswick	99.2	100.0	24.1	50.0
Quebec	97.9	99.5	40.8	57.1
Ontario	99.3	100.0	46.2	64.5
Manitoba	99.6	98.7	50.0	78.3
Saskatchewan	98.3	98.8	59.9	71.0
Alberta	98.6	97.6	58.8	72.5
British Columbia	99.1	100.0	41.1	56.8

Source: Environics HOMES survey, 1989

Please note that the very high percentages of self-provision labour purchased in some provinces are in part due to the low number of respondents in some provinces. The number of respondents by province is shown in Table 1.

The labour amount in step 2 can now be further broken down into the labour that is purchased and the labour that is done by family members. This is done for contract, self-promote and self-build construction using the proportions from the Environics HOMES survey and reported in Table 2.

Example of Step 3:

Because the percentage of labour purchased varies from province to province, we use Newfoundland as an example:

Table 3: Percent of Labour purchased, Newfoundland 1993

	Value of labour (Step 2)	% Labour Purchased (HOMES)	Value of Labour Purchased
Contract	\$11,964	95.5	\$11,426
Self-promote	7,198	100.0	7,198
Self-build	11,996	49.0	5,878

♦ Step 4 - Calculation of Revenue Generated from taxation

Another aspect of the economic impact of self-provision housing construction is the generation of government revenues. Provincial sales tax (PST) and federal tax (FST before 1991, GST after) are collected on the materials purchased. Income tax is also collected on the wages paid for labour. In order to assess how much is collected, PST and GST amounts are calculated for the cost of the materials and the average income tax rate is applied to the amount spent on labour, both on a provincial basis. The average income tax rate is calculated from Statistics Canada data on personal income by province and direct taxes collected by province.⁹ This gives the effective income tax rates for each province. As shown in Table 4, the effective income tax rate increased by about 2 percent between 1989 and 1991. We use the 1989 rates in all of our calculations, keeping our estimates conservative.

⁹ CANSIM matrices 6676 was used for the tax amounts and 5099 was used for the personal income amounts. See Appendix 3 for the calculations.

Table 4: Effective Income tax rates by Province, 1989 and 1991

Values in \$ Millions	1989			1991		
	Personal Income	Tax	Effective Rate (%)	Personal Income	Tax	Effective Rate (%)
Newfoundland	8,653	1,394	16.11	9,759	1,763	18.07
P.E.I.	1,987	343	17.26	2,237	419	18.73
Nova Scotia	15,151	2,839	18.74	16,813	3,592	21.36
New Brunswick	11,644	2,093	17.97	12,859	2,593	20.16
Quebec	130,254	25,563	22.70	144,323	34,864	24.16
Ontario	227,293	47,770	21.02	245,841	56,536	23.00
Manitoba	19,926	3,331	16.72	21,276	4,080	19.18
Saskatchewan	17,145	2,878	16.79	18,358	3,580	19.50
Alberta	50,670	9,651	19.05	57,253	12,454	21.75
B.C.	58,278	12,520	21.48	74,801	15,959	21.34
Canada	549,415	112,990	20.57	605,499	136,630	22.56

Note: Amounts for Canada are not total columns. The Yukon and North West Territories are included in these amounts.

Example of Step 5 Calculation

Revenue Generated from Taxation in Newfoundland, 1993

Because tax rates differ from province to province, values are calculated separately for each province. Table 5 shows the calculations for Newfoundland in 1993:

Table 5: Calculation of Revenue Generated through Taxation, Newfoundland 1993

	Contract	Self-Promote	Self-Build
Value of Labour Purchased	11,426	3,387	2,766
Effective Tax rate	16.11%	16.11%	16.11%
Revenue Generated	1,841	546	446
Value of Materials	55,887	12,907	21,512
GST	4.5%	4.5%	4.5%
Revenue Generated	2,514	581	968
Value of Materials	55,887	12,907	21,512
PST	12.0%	12.0%	12.0%
Revenue Generated	6,796	1,549	2,581
Total revenue generated in Newfoundland	11,151	2,676	3,995

♦Assumptions

To simplify the calculation of the federal tax on materials, the GST rate is applied to 1989 as well as from 1991 on. This should not create much inaccuracy. When the GST was introduced the Government estimated that its impact on housing could be held to 1 percent or less, and that in some areas it would actually decrease the amount of tax paid and in others slightly increase the rate.¹⁰ The values for the GST itself from 1991 on are also estimates. A 7 percent GST is charged on all goods, but there is a 2.5 percent rebate on materials bought to build a new house. This rebate applies only if the value of the house is less than 350,000. The rebate is reduced if the value of the house is greater than 350,000 and no rebate is given if the value is over 450,000. Also, a full rebate of the entire GST is given for some types of materials. We have applied the 2.5 percent rebate to the full materials expenditures.

Note on the Methodology: Other Attempts

In order to estimate the economic impacts of self-provided housing in construction we attempted to use several different data sources and methods. To achieve our first task of establishing the value of labour and materials purchased in the self-provision housing sector, we tried using Statistics Canada data from *Construction in Canada*. We purchased a breakdown of contract and "own-account"¹¹ residential construction by Labour, Materials and Total expenditure amounts from the Investment and Capital Stock Division of Statistics Canada. These data were provided by province and year from 1986 to 1993. We knew from the outset that this data would not be exactly what we wanted because, like the *Construction in Canada* data, they would include both new and repair construction.

This method did not prove satisfactory and was problematic for several reasons. Most seriously, the value obtained for *contract* single-detached new construction seemed low when compared to the *own-account* amount that had been provided. The percentage of own-account housing seemed to be too high a percentage of the total. For example, for 1989 - 62 percent of single-detached construction in New Brunswick would be called own-account by this means, and 48 percent for Quebec.

In the data published in *Construction in Canada*, the dwelling type categories include "single-detached" "Semi-detached including duplexes" "Apartments including row housing" and "other." The total we were working with using our purchased data was the same as the total of these kinds of dwellings. Further discussions with people at Statistics Canada established that the major renovation amount together with repair amounts and other types of dwellings, is included in *Construction in Canada's* "other" category. Taking this in to account would further reduce the contract amount, making the proportions of contract to own-account construction even lower. While no one at Statistics Canada could find a flaw in our approach, there was agreement that our results did not seem plausible.

Next we approached the Household Surveys Division of Statistics Canada. Since much of the *Construction in Canada* data come from this source we thought they might be of some help in identifying renovation and repair expenditures. They provided us with major renovation and

¹⁰ See "The Goods and Services Tax: Information on Housing" Supply and Services Canada, 1990.

¹¹ This is the term used by Statistics Canada to describe self-provision housing.

repair amount by type of dwelling for 1993 and informed us that these data were also available by province for the years we are interested in. When we tried to modify our procedure used to separating out the single-detached *new* construction amount, however, we ended up with a negative value for this type of construction. We were not successful in obtaining an explanation for this.

THE RESULTS

As outlined above, we calculate:

- ♦ the value of new single-detached residential construction by sector
- ♦ the value of labour and materials purchased by sector
- ♦ the revenue generated by taxation on labour and materials purchased by sector

We present the results here for each of these by region for 1993. Results for other years by province are found in the appendices.

Table 6 summarizes the total expenditures for new single-detached dwellings (SDDs) in Canada for 1993. Total contract expenditures were \$7,661,165 thousand. Total self-build expenditures were 1,851,072 - approximately one-third as much as the contract amount. Self-promote expenditures totalled an additional \$947,711.

Table 6: Overview of Estimated Labour, Materials and Taxation Expenditures by Sector, Canada, 1993

values in \$ 000		Contract	Self-Promote	Self-Build
Labour		2,372,129	294,863	326,111
Materials		4,305,399	532,034	1,305,349
Taxes	Total	983,637	120,814	219,612
	PST	296,292	23,942	58,741
	GST	193,743	36,377	93,320
	Income	493,602	60,495	67,551
TOTAL		7,661,165	947,711	1,851,072

It is interesting to consider the proportion of expenditures in taxation for each sector. As Table 7 shows, the expenditures on taxes are about the same for contract and self-promoted construction - 12.8 percent and 12.7 percent respectively. Taxation expenditures are lower in the self-build sector, constituting 11.9 percent of expenditure. As one would expect, the biggest difference between the sectors is the proportion spent on labour. For both contract and self-promote construction just over 30 percent of the total cost is spent on labour, whereas for self-build construction it is under 18 percent.

Table 7: Percentage Breakdown of Expenditures by Sector

	Contract	Self-promote	Self-build
Labour	31.0%	31.1%	17.6%
Materials	56.2	56.1	70.5
Taxes	12.8	12.7	11.9
Total	100.0%	99.9%	100.0%

What is the Value of Construction in Each Sector?

For our purposes there are three different residential construction sectors. As outlined in the methodology section, this classification is based on the extent to which family members participate in the different tasks associated with building a home. Contract construction is construction where most of the work and organization is done by a contractor rather than family members. Self-promote construction is where family members are involved in some major task, but not to the same extent as in self-build construction. (Please see the methodology section for the precise definition of these terms.)

As Table 8 shows, self-promoted construction valued \$828,714 thousand in 1993 while self-build construction valued \$2,033,253 thousand. Contract construction had a total value of \$6,706,228 thousand dollars.

Table 8: Value of Residential Construction Sectors by Region, 1993

values in \$000	Atlantic	Quebec	Ontario	Prairies	B.C.	Total
Contract	247,972	877,761	2,681,861	1,205,649	1,692,985	6,706,228
Self-Promote	85,745	149,789	253,925	189,127	150,128	828,714
Self-Build	218,738	470,336	542,633	334,993	466,553	2,033,253
Total	552,455	1,497,886	3,478,419	1,729,769	2,309,666	9,568,195

There are several assumptions that have been made in calculating the value of construction by sector. As already mentioned, the percentage breakdown used in the calculation comes from the Environics Homes study, which considered new houses build between 1985 and 1989. We are assuming that this percentage is stable over time. The 1985 to 1989 period fits with this assumption. The sample also only included homeowners in CMAs. Because self-provision housing tends to be more common in rural than urban areas, the estimates of self-provision housing values given here are conservative ones.

What is Value of Labour and Materials in Each Sector?

As described in the methodology section, materials and labour amounts are estimated for each sector using the Statistics Canada ratio from construction censuses. As Table 9 shows, in 1993 expenditures on materials by the self-promotion sector totalled 534,032 thousand dollars and 294,863 thousand was spent on labour. The self-build amounts are higher, with 1,305,349 thousand dollars having been spent on materials and 326,111 thousand on labour.

Table 9: Expenditures on Labour and Materials for Residential Single-Detached Construction, by Construction Sector, 1993.

Value in \$000	Contract		Self-promote		Self-build	
	Materials	Labour Purchased	Materials	Labour Purchased	Materials	Labour Purchased
Atlantic	159,198	84,331	55,048	30,636	140,430	28,911
Quebec	563,523	307,639	96,164	53,356	301,956	68,699
Ontario	1,721,755	953,386	163,020	90,905	348,371	89,749
Prairies	774,027	426,139	121,419	66,219	215,066	70,103
B.C.	1,086,896	600,634	96,382	53,746	299,527	68,648
Total	2,400,830	2,372,129	532,034	294,863	1,305,349	326,111

How much Government Revenue was Generated by Self-Provision Housing?

A final economic impact of housing construction is the government revenue generated both from taxes on materials purchased and income tax on wages paid. Table 10 shows the approximate amount of revenue generated by single-detached new housing construction in 1993. In both the contract and self-promote sectors more revenue was generated by income tax than sales taxes. Because of self-provided labour in self-build housing, more revenue is generated from it in PST than income tax. The self-build income tax expenditures were about 13 percent of the contract total. The self-build PST and GST amounts, however, total respectively 32 and 30 percent of the contract amount of these taxes. (This difference between the PST and GST percentages reflects that self-build housing is more common in provinces with higher PST rates.)

Table 10: Government Revenues Generated by Residential Housing Construction, by Sector, 1993.

Values in \$000	Contract			Self-Promote			Self-Build		
	PST	GST	Income Tax	PST	GST	Income Tax	PST	GST	Income Tax
Atlantic	16,349	7,164	15,175	5,763	2,477	5,396	14,473	6,319	5,199
Quebec	50,717	25,359	69,823	8,655	4,327	12,110	27,176	13,588	15,592
Ontario	137,740	77,479	200,372	13,042	7,336	19,105	27,870	15,677	18,863
Prairies	15,403	34,831	79,195	2,171	5,464	12,337	2,834	9,678	13,150
B.C.	76,083	48,910	129,036	6,747	4,337	11,546	20,967	13,479	14,748
Total	296,292	193,743	493,601	36,378	23,941	60,494	93,320	58,741	67,552

APPLICATION OF THE FINDINGS

The findings described in the preceding Section can be adapted to a more general analysis. This can inform assessments of self-provisioning as an option for housing policy. In this section we provide the necessary information for such a consideration. Self-provisioning is strongest in non-metropolitan areas of Canada, however, as we have shown in the preceding section, there is also a vibrant self-provisioning sector in Canadian CMA's. From a policy perspective, it is likely that there would be interest in supporting the construction of duplex and row dwellings, in addition to single detached dwellings on which we have based the preceding analysis. Because the construction of duplex and row dwellings uses similar technology and processes to the construction of single detached dwellings, we are able to shift our focus in this section to these lower density multiple dwellings.

In this section we first establish the labour and materials expenditures for an average duplex or row dwelling on a provincial basis. We then estimate the direct tax revenues which would be forthcoming from the labour and materials components of the construction such a dwelling. Finally, we provide a comparison of using a housing program with a self-help option to one which does not encourage participation of the future residents in the construction of their dwelling.

Estimates of Per Unit Expenditures for Low Density Multiple Dwellings

The average value of a duplex or row dwelling in 1993 is provided in Table 11 for each province. As can be seen, there is some variation around the Canadian average of \$66,800.

Table 11: Average Cost of Multiple Units by Province, 1993

Province	Value (\$'000)	Number of Starts	Average Cost per Unit (\$'000)
Newfoundland	10,172	157	64,790
P.E.I	2,574	60	42,900
Nova Scotia	48,022	577	83,227
New Brunswick	11,355	307	36,987
Quebec	390,034	7,255	53,761
Ontario	740,164	9,985	74,128
Manitoba	10,526	135	77,970
Saskatchewan	10,567	139	76,022
Alberta	166,775	3,519	47,393
BC	631,603	8,156	77,440
CANADA	2023,738	30,290	66,812

Source: Values of Multiple Construction come from Building Permit data (Double and Row combined). Number of Starts come from Table 14 of Canadian Housing Statistics, 1993.

The Average values for New Brunswick and Alberta are lower than one would expect.¹² We cannot explain these low values, which may result from either an over-statement of the number of

¹²

Note that the Number of starts for Alberta include the Yukon and the Northwest

units or an under-statement of the cumulative values. The inclusion of these lower than expected average values, if they are incorrect, would serve to result in an under-estimation of the government revenues potentially resulting from multiple self-help housing construction.

Table 12 shows estimates for the per unit values for labour and materials. These values are based on the Statistics Canada ratio for residential construction.¹³

Table 12: Per Unit Labour and Materials Estimates for Multiple housing by Province, 1993

Province	Average Cost per Unit	Value of Materials	Value of Labour
Newfoundland	\$64,790	\$41,595	\$23,195
P.E.I	42,900	27,542	15,358
Nova Scotia	83,227	53,432	29,795
New Brunswick	36,987	23,746	13,421
Quebec	53,761	34,514	19,246
Ontario	74,128	47,590	26,538
Manitoba	77,970	50,057	27,913
Saskatchewan	76,022	48,806	27,216
Alberta	47,393	30,426	16,967
BC	77,440	49,717	27,724

In order to apply the foregoing findings to the hypothetical production of \$1 million in self-help multiple housing construction, it is first of all necessary to convert the labour and material expenditures in contracted construction to the labour and materials expenditures if self-help were employed at the average historic provincial rates. The following table first sets out the material and labour expenditures for the contracted multiple construction prorated to \$1 million and the equivalent material and labour expenditures for the same expenditure of \$1 million employing self-help.

Territories while the value of dwelling types do not. Because of the small number of multiples in these areas this does not have a significant effect on the results.

¹³ See step 2 of section 2.2

Table 13: Labour and Material Expenditure per \$1 Million in Contracted and Self-help Multiple Housing

Province	Value (\$000)	Per \$1M	Contracted Materials	Contracted Labour	% Paid Labour	Self-help Labour	Self-help Materials
Newfoundland	\$10,172.00	\$5,026.34	\$3,226.91	\$1,799.43	0.49	\$1,581.19	\$3,445.16
Prince Ed. Island	\$2,574.00	\$1,271.90	\$816.56	\$455.34	0.42	\$340.51	\$931.40
Nova Scotia	\$48,022.00	\$23,729.36	\$15,234.25	\$8,495.11	0.37	\$5,651.91	\$18,077.45
New Brunswick	\$11,355.00	\$5,610.90	\$3,602.20	\$2,008.70	0.24	\$868.13	\$4,742.77
Quebec	\$390,034.00	\$192,729.49	\$123,732.33	\$68,997.16	0.41	\$50,482.79	\$142,246.70
Ontario	\$740,164.00	\$365,741.02	\$234,805.73	\$130,935.29	0.46	\$108,480.25	\$257,260.77
Manitoba	\$10,526.00	\$5,201.27	\$3,339.21	\$1,862.05	0.5	\$1,669.61	\$3,531.66
Saskatchewan	\$10,567.00	\$5,221.53	\$3,352.22	\$1,869.31	0.6	\$2,007.98	\$3,213.55
Alberta	\$166,775.00	\$82,409.38	\$52,906.82	\$29,502.56	0.59	\$31,109.21	\$51,300.17
BC	\$631,603.00	\$312,097.22	\$200,366.41	\$111,730.80	0.41	\$82,350.60	\$229,746.62
CANADA	\$2,023,738.00	\$1,000,000.00	\$642,000.00	\$358,000.00	0.45	\$288,065.40	\$711,934.60

Estimates of Tax Revenues from Low Density Multiple Construction

The per unit labour and materials estimates provide the basis for calculating the potential direct sales taxes from the sale of materials and income taxes from labour. In order to provide a comparison of self-provisioning to commercial construction, we have assumed that the average level of sweat equity which applies in CMA's for single detached dwellings will be the same for low density multiples. Therefore for each province the low density multiples ratio of paid to unpaid labour is taken to be the same as the single-detached dwelling ratio reported in the previous section.

Table 14 provides estimates of GST and PST revenue from the sale of materials for the average low density multiple dwelling in each province based on contracted construction. The GST revenues vary by the average cost of the dwelling, whereas PST revenues have the added factor of differing rates among provinces. An added consideration is that in Newfoundland PST is added on top of the cost of materials and GST, while other provinces only apply PST to the cost of materials. This has been taken into account in subsequent calculations. The other source of government revenue is the direct income taxes on employment income. These are estimated using the findings from the preceding section to reflect the portion of the average low density multiple housing unit in each province which represents contracted labour.

Table 14: Government Revenue generated through \$1 Million in Contracted Multiple Construction, by Province, 1993.*

Province	Labour	Materials	Total Labour & Materials	GST Revenue	PST Rate	PST Revenue	Income Tax Rate	Income Tax Rev.	Total Revenue
Newfoundland	\$3,230	\$1,801	\$5,031	\$226	0.12	\$631	18.07	\$584	\$1,441
Prince Ed. Isl.	\$817	\$456	\$1,273	\$57	0.1	\$46	18.72	\$153	\$256
Nova Scotia	\$15,249	\$8,503	\$23,752	\$1,069	0.1	\$850	21.36	\$3,257	\$5,176
New Brunswick	\$3,606	\$2,011	\$5,617	\$253	0.1	\$201	20.16	\$727	\$1,181
Quebec	\$123,851	\$69,064	\$192,915	\$8,681	0.07	\$604	24.16	\$29,922	\$39,207
Ontario	\$235,031	\$131,063	\$366,094	\$16,474	0.08	\$10,485	23	\$54,057	\$81,016
Manitoba	\$3,342	\$1,864	\$5,206	\$234	0.1	\$186	19.18	\$641	\$1,062
Saskatchewan	\$3,355	\$1,871	\$5,226	\$235	0.1	\$187	19.5	\$654	\$1,076
Alberta	\$52,958	\$29,531	\$82,489	\$3,712		\$0	21.75	\$11,518	\$15,230
Brit. Columbia	\$200,557	\$111,839	\$312,396	\$14,058	0.07	\$7,829	21.34	\$42,799	\$64,685
Canada	\$641,996	\$358,003	\$999,999	\$45,000		\$21,019	20.73	\$144,313	\$210,332

* Contracted multiple construction- revenues per \$million

This conclusion, that the federal and provincial governments receive a total of over \$210,000 in income and sales tax revenues from \$1 million in contracted multiple construction, is compared with what revenues would be generated if the same \$1 million were expended in self-help:

Table 15: Hypothetical Government Revenue generated through \$1 Million in Self-help Multiple Construction, by Province

Province	Labour	Materials	Total Labour & Materials	GST Revenue	PST Rate	PST Revenue	Income Tax Rate	Income Tax Rev.	Total Revenue
Newfoundland	\$1,080	\$3,947	\$5,026	\$226	0.12	\$630	18.07	\$713	\$1,570
Prince Ed. Isl.	\$240	\$1,032	\$1,272	\$57	0.1	\$24	18.72	\$193	\$274
Nova Scotia	\$4,072	\$19,657	\$23,729	\$1,068	0.1	\$407	21.36	\$4,199	\$5,674
New Brunswick	\$666	\$4,945	\$5,611	\$252	0.1	\$67	20.16	\$997	\$1,316
Quebec	\$35,761	\$156,969	\$192,730	\$8,673	0.07	\$603	24.16	\$37,924	\$47,200
Ontario	\$75,003	\$290,738	\$365,741	\$16,458	0.08	\$6,000	23	\$66,870	\$89,328
Manitoba	\$1,135	\$4,066	\$5,201	\$234	0.1	\$114	19.18	\$780	\$1,127
Saskatchewan	\$1,309	\$3,913	\$5,222	\$235	0.1	\$131	19.5	\$763	\$1,129
Alberta	\$20,370	\$62,040	\$82,409	\$3,708		\$0	21.75	\$13,494	\$17,202
Brit. Columbia	\$58,256	\$253,842	\$312,097	\$14,044	0.07	\$4,078	21.34	\$54,170	\$72,292
Canada	\$200,350	\$799,650	\$999,038	\$44,957		\$12,054	20.73	\$180,102	\$237,112

The total government revenues from \$1 million in contracted multiple construction amount to an estimated at some \$210,000 while the revenues from the same value of potential self-help construction are estimated at just over \$237,000, 13 % higher than the contracted amount. This reflects the savings in labour cost being transferred in greater material purchases and translated in

turn into a larger number of homes being realized from the same dollar expenditures. The percentages by province are as follows:

Newfoundland	108.96	Ontario	110.26
Prince Edward Island	107.1	Manitoba	106.15
Nova Scotia	109.61	Saskatchewan	104.88
New Brunswick	111.45	Alberta	112.95
Quebec	120.39	British Columbia	111.76

These estimates are all based on the historic rates of self-help activity (i.e. the percentages of paid versus unpaid labour) by province within single detached housing. It is important to recognize that these rates reflect differences in culture, the incidence of various construction-related skills and systemic factors such as the presence of a developed construction industry, regulatory supports for or against self-construction, and many other factors. The differences in government revenue also reflect the different ways in which provincial sales taxes are calculated. What is most important to recognize is that the potential revenue from self-help multiple construction is not being realized today. Provided appropriate supports and encouragement from governments, more affordable housing could be produced, with a net gain to government and without any ongoing subsidies.

Where assisted housing programs continue to be offered, those which use a self-providing option can increase the number of units which can be produced with the same expenditure and generate similar levels of tax revenues for government. For example, the expenditure of \$1M in Ontario on a housing program with a self-provision option would allow 3 additional dwelling units to be constructed while increasing government revenues by some 10%.

Summary and Conclusions

The economic impact of self-provided housing is greatest in the Atlantic region, but is substantial in all of Canada. In Newfoundland, P.E.I. and Nova Scotia over half of all new single-detached dwelling (SDD) starts are in the self-provision sector. Manitoba has the lowest rate of self-provision with 18.5 percent of new SDD starts belonging to this sector. Much of the labour involved in self-provided construction is purchased rather than done by family members. There is almost no difference between the proportion of labour purchased in the contract and self-promote sectors. The rates for each province are above 95 percent in both of these categories. For self-built construction the proportion of labour purchased is substantially lower. The percentage ranges from 37.1 percent in Nova Scotia to 58.9 percent in Alberta.

The total amount of expenditures for SDDs by sector for 1993, as summarized in Table 4, are about \$7,661,165 thousand for contract and \$1,851,072 thousand for self-build. Self-build housing construction, therefore, adds about an extra 25 percent to the total SDD construction expenditures. As one would expect, the largest amount of these expenditures is for materials. \$1,305,349 thousand dollars was spent on materials in this sector in 1993. Some \$326,111 thousand was spent on labour costs and \$219,612 thousand on taxes. Labour purchased in this sector makes up just about 16 percent of the total cost. Because the materials are of much

greater cost than the labour, more of the tax revenue is generated through sales taxes than income tax. In 1993, \$58,741 thousand was generated through Provincial Sales Tax on materials bought for self-build construction and \$93,320 thousand by the Federal Goods and Services Tax. An additional \$67,551 was generated through income tax on the labour purchased.

Earlier studies have documented many other benefits of self-help housing. Among these are skill development, enhanced pride and confidence for the participants, and better maintained housing over time.

The basic assumptions underlying this study are that low income households in Canada are not currently being adequately housed and that private market housing cannot meet these needs, in part because of the costs of construction. It has been shown that self-help can significantly reduce the costs, and may bring it within reach of those in need. These lead to the suggestion that multiple self-help housing by low and moderate income households could generate benefits to government, since such housing is not currently being produced.

It is estimated that, for every \$1 Million spent on multiple housing which is produced in Canada, the federal and provincial governments receive more than \$210,000 in revenue from income taxes paid on labour and provincial and federal sales taxes on materials. Additional corporate income taxes are generated and municipalities realize both development charges and property taxes on the resulting 15 units of housing. It has been estimated elsewhere that this results in the creation of 22 person years of direct and indirect employment.

Should governments act to encourage multiple self-help housing for low and moderate income households, the same expenditure would generate over \$237,000 in federal and provincial government revenues, again with other corporate taxes, development charges and property taxes being generated. The \$1 Million in expenditures would result in the creation of 23 units of needed housing. Because self-help results in a higher portion of indirect labour which accounts for a large share than direct labour under contracted construction, the \$1 M. will result in more person years of employment.

There are some caveats to these estimates. They are based on the the 1993 provincial distribution of self-help housing activity by moderate income families and the actual 1993 distribution of multiple activity. Neither of these is essential to the validity of the estimates, since variations can and will occur in practice, subject to needs and demands and the level of support and encouragement federal, provincial and municipal agencies might provide to multiple self-help housing.

The State of Victoria in Australia has successfully delivered a self-help housing program for several years, bringing together groups of 12 low and moderate income households to work together on the construction their own housing. The State provides on-site guidance through contracted architectural services, bridge financing during construction and computer supports for each group to maintain its financial records. This successful multiple self-help program is estimated to represents a life-time cost to government of some \$2,600 Canadian for each low income family housed. While the Australian example is oriented towards homeownership, a

Canadian alternative might include other forms of tenure, including condominium, limited equity, and non-profit and co-operative housing. The essential element of the Australian program has been the collective approach, with the group of families working together to maintain the necessary drive to complete what was often a daunting task for families working alone. The United States Senate has also sponsored a self-help demonstration program focusing on multiple housing for disadvantaged groups with considerable success.

The time has come to consider the potential in Canada, where there has been a tradition of self-help in individual ownership housing but no sustained support for collective approaches targeted to those in need. This study has shown that there would be a significant pay-back to governments if they encouraged an activity which would both serve to stimulate employment generation in the construction industry and serve the housing needs of low and moderate income families, those who have been a priority clientele for assisted housing programs in the past. This suggests the merit of government encouragement, through promotional and educational materials, training and skill development, expert guidance, small start-up grants or loans and mortgage insurance underwriting assistance.

CONCLUSIONS

Earlier studies have documented many other benefits of self-help housing. Among these are skill development, enhanced pride and confidence for the participants, and better maintained housing over time.

We began our analysis with a review of the current self-help housing activity in Canada. The economic impact of self-provided housing is greatest in the Atlantic region, but is substantial in all of Canada. In Newfoundland, P.E.I. and Nova Scotia over half of all new single-detached dwelling starts are in the self-provision sector. Manitoba has the lowest rate of self-provision with 18.5 percent of new such starts belonging to this sector. Much of the labour involved in self-provided construction is purchased rather than done by family members. There is almost no difference between the proportion of labour purchased in the contract and self-promote sectors. The rates for each province are above 95 percent in both of these categories. For self-built construction the proportion of labour purchased is substantially lower. The percentage ranges from 37.1 percent in Nova Scotia to 58.9 percent in Alberta. The total amount of expenditures for single dwellings by sector for 1993, as summarized in Table 4, are about \$7.66 billion for contract and \$1.85 billion for self-build. Self-build housing construction, therefore, adds about an extra 25 percent to the total construction expenditures in single detached dwellings.

As one would expect, the largest amount of these expenditures is for materials. \$1.305 billion was spent on materials in this sector in 1993. \$326.1 million was spent on labour costs and \$219.6 million on taxes. Labour purchased in this sector makes up just about 16 percent of the total cost. Because the materials are of much greater cost than the labour, more of the tax revenue is generated through sales taxes than income tax. In 1993, \$58.7 million was generated through provincial sales taxes on materials bought for self-build construction and \$93.3 million by the federal Goods and Services Tax. An additional \$67.55 million was generated through income tax on the labour purchased. Self-provision also provides an option to increase the number of units that can be produced with a given level of public expenditure. As our analysis has shown, the net cost to government in terms of lost (direct) tax revenues is trivial, for example, roughly \$16,000 for additional units in Ontario.

The basic assumptions underlying this study are that low income households in Canada are not currently being adequately housed and that private market housing cannot meet these needs, in part because of the costs of construction. It has been shown that self-help can significantly reduce the costs, and may bring it within reach of those in need. These lead to the suggestion that multiple self-help housing by low and moderate income households could generate benefits to government, since such housing is not currently being produced. It is estimated that, for every \$1 Million spent on multiple housing in Canada, the federal and provincial governments receive almost \$206,000 in revenue from income taxes paid on labour and provincial and federal sales taxes on materials. Additional corporate income taxes are generated and municipalities realize both development charges and property taxes on the resulting 15 units of housing. It has been estimated elsewhere that this results in the create of 22 person years of direct and indirect employment.

Should governments act to encourage multiple self-help housing for low and moderate income households, the same expenditure would generate some \$195,000 in federal and provincial government revenues, again with other corporate taxes, development charges and property taxes being generated. The \$1 Million in expenditures would result in the creation of 23 units of needed housing and generate almost the same employment as fully-contracted construction.

There are some caveats to these estimates. They are based on the the 1993 provincial distribution of self-help housing activity by moderate income families and the actual 1993 distribution of contracted multiple activity. The taxes generated through indirect labour cannot be established with dependability, and taxes generated in this area are estimated to be almost as great as from on-site employment. Neither of these is essential to the general validity of the estimates, since variations can and will occur in practice, subject to needs and demands and the level of support and encouragement federal, provincial and municipal agencies might provide to multiple self-help housing.

The State of Victoria in Australia has successfully delivered a self-help housing program for several years, bringing together groups of 12 low and moderate income households to work together on the construction their own housing. The State provides on-site guidance through contracted architectural services, bridge financing during construction and computer supports for each group to maintain its financial records. The net cost to government of this program is equivalent to some \$2500 per home.

The United States Senate has also sponsored a self-help demonstration program focusing on multiple housing for disadvantaged groups with considerable success. While the Australian example is oriented towards homeownership, a Canadian alternative might include other forms of tenure, including condominium, limited equity, and non-profit and co-operative housing. The essential element of the Australian program has been the collective approach, with the group of families working together to maintain the necessary drive to complete what was often a daunting task for families working alone.

The time has come to consider the potential in Canada, where there has been a tradition of self-help in individual ownership housing but no sustained support for collective approaches targeted to those in need. This study has shown that the revenues to federal and provincial governments of a self-help initiative would amount to some \$8,440 per dwelling, a significant pay-back to government of an activity which would both serve to stimulate employment generation in the construction industry and serve the housing needs of low and moderate income families.