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BENEFITS FROM INDUSTRIAL PRODUCTION OF WATER POLLUTION ABATEMENT EQUIPMENT FOR THE PULP AND PAPER INDUSTRY

by Keith L. Aird

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Keith Aird

C O N T E N T S

MAIN POINTS

The following is a summary of the major findings of this study. These conclusions, and the more detailed results in the text, are only significant in the context of the background material and methodology presented in Chapters 1-3:

1) The installation of water pollution abatement plant in pulp and paper mills consists mainly of onsite construction of treatment facilities.

2) Important linkages between the activity of installation of pulp and paper effluent treatment plant and the construction, metal fabricating, concrete products, electrical products and other building materials producing industries are initiated if compliance with the Pulp and Paper Effluent Regulations is assumed on the basis of existing or 'best practicable' technology. The pulp and paper industry consumes that part of the product of the new pollution abatement equipment industry defined by these linkages.

3) On the basis of the number of mills existing in 1971, their effluent conditions and flow rates, it is estimated that capital expenditures amounting to $478 million would be required in the period 1971-80

for those mills to comply fully with the Pulp and Paper Effluent Regulations of November 1971. This total is distributed among primary, secondary and recovery treatment types in the proportions 33%, 22% and 45%, respectively.

4) The total value added to the economy, or gross domestic product at factor cost, resulting from the production of all materials used in constructing pulp and paper effluent treatment plant, together with the labour services used in onsite construction, is estimated to be $704 million on the basis of the assumptions given in Ch. 3. The value added per dollar of capital expenditures by treatment type was estimated to be $1.56, $1.59 and $1.35 for primary, secondary and recovery, respectively.

5) The employment generated by total capital expenditures on effluent treatment plant is estimated to be 65,652 man-years, of which 15,610 man-years are required to produce all material inputs used in such construction.

6) The value added to the economy by the required expenditure on effluent treatment plant exceeded what would be added to the economy if that expenditure was made

in the usual capital expenditure pattern of the pulp and paper industry.

7) The main explanation of the result in 6) above is the much greater direct import leakage, 29.5 percent, associated with usual pulp and paper capital expenditure, as compared with 3.7 percent of expenditure on installing effluent treatment plant.

8) Industrial machinery accounted for 47 percent of usual pulp and paper capital expenditures and 89 percent of direct imports. In contrast, the onsite construction of effluent treatment plant involves little expenditure, 3.2 percent, on prefabricated industrial machinery of which 34 percent was spent on imports.

POINTS ESSENTIELS

Ce qui suit est un sommaire des principales conclusions de cette étude. Ces conclusions, ainsi que les résultats plus détaillés dans le texte, ne sont significatives que dans le contexte du matériel de base et de la méthodologie présentés aux Chapitres 1 à 3:

1) Installer un appareil de dépollution de l'eau dans les usines de pâtes et papiers revient principalement à construire à pied d'oeuvre des moyens de traitement.

2) L'observance des règlements sur les effluents des pâtes et papiers selon la technologie existante ou "la plus pratique" entraîne d'importantes connexions entre l'activité consistant à installer l'appareil de traitement de ces effluents et les industries de la construction, de la fabrication des métaux, des articles en béton, des produits électriques et des autres matériaux de construction. L'industrie des pâtes et papiers consomme cette partie de la production de la nouvelle industrie d'équipement de dépollution, telle que définie par ces relations.

3) Sur la base du nombre des usines existant en 1971, des conditions et des débits de leurs effluents, on évalue à $478 millions le montant des dépenses en immobilisations

qui seraient requises durant la période 1971-80 pour que ces usines se conforment aux Règlements sur les Effluents des Pâtes et Papiers de novembre 1971. Ce total se répartit entre les types de traitement primaire, secondaire et par récupération dans les proportions respectives de 33, 22 et 45%.

4) En se fondant sur les hypothèses posées au Ch. 3, on estime à $704 millions la plus-value totale, ou le produit domestique brut au prix de gros, résultant de la production de tous les matériaux utilisés pour la fabrication de l'appareil de traitement des effluents ainsi que la main d'oeuvre employée pour la construction à pied d'oeuvre. La plus-value par dollar dépensé en immobilisations a été évaluée respectivement à $1.56, $1.59 et $1.35 pour les types de traitement primaire, secondaire et de récupération.

5) L'emploi créé par les dépenses totales en immobilisations relatives à l'appareil de traitement des effluents, est évalué à 65,652 hommes-années, dont 15,610 sont requis pour produire tous les matériaux utilisés dans une telle construction.

6) La plus value résultant de l'investissement nécessité par l'appareil de traitement des effluents était plus

grande que si l'investissement avait eu lieu selon le scheme ordinaire de dépenses en immobilisations de l'industrie des pâtes et papiers.

7) Le résultat repporté au Ch. 6 ci-dessus s'explique surtout par la fuite beaucoup plus grande à l'importation directe, 29.5%, ordinairement associée aux dépenses en immobilisations, à comparer à celles de 3.7% pour installer un appareil de traitement des effluents des pâtes et papiers.

8) La machinerie industrielle comptait pour 47% des dépenses en immobilisations courantes dans l'industrie des pâtes et papiers et pour 89% des importantes directes. Par contre, la construction à pied d'oeuvre de l'appareil de traitement des effluents implique une faible mise de fond, 3.2%, sur la machinerie industrielle préfabriquée, dont 34% était pour les importations.

1. INTRODUCTION

The commitment of modern communities to the abatement of industrial pollution has induced an allocation of resources to that activity. Associated with this activity are the backward linkages with other industries whose products are the equipment, material and service inputs used in constructing pollution abatement plant. The activity of industrial production of pollution abatement equipment is new, and, as such, is not separately identified in the Standard Industrial Classification of Statistics Canada. This report addresses itself to the problem of identifying the complex range and quantities of equipment and materials used in the construction of pollution abatement facilities. However, the problems of defining the sources, and measuring the value, of this addition to overall economic activity, still remain.

This study is concerned with one consequence* of the institutional removal of discretionary action over liquid waste treatment in the pulp and paper industry by the firms comprising that industry. That consequence is the derived demand for inputs of materials and labour for installing water pollution abatement plant sufficient for those mills existing in 1970-71 to comply with the Pulp and Paper Effluent Regulations by 1980. Qualitatively, this derived demand is composed of goods and services already produced for other uses by domestic industries. The particular objectives of the study,

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* A consequence of environmental policy which is the more frequent preoccupation of economic study is the effect of such a policy on the industry itself. A theoretical implication of the forced internalization of fixed abatement costs is that mills which have difficulty in meeting their average variable costs will experience a disproportionately larger debt burden on their investments in fixed plant. Shutdowns may follow. This kind of prediction is not being investigated in this study.

described in Chapter 2, are the identification of such industries and the estimation of the magnitude of their contribution to gross output and employment in meeting this demand.

More generally, as is suggested in Chapter 2, estimates of the gross benefits to the economy resulting from the policy prescribed in the Pulp and Paper Effluent Regulations, form part of the data which would be required for a cost-benefit evaluation of this policy. The costs are the value of investment alternatives foregone in restricting the use of a set of resources to that of water pollution abatement in the pulp and paper industry. If the economy is operating at full employment, this cost will be higher than otherwise. The benefits are, in addition to those measured in this study, the imputed value of cleaner water courses resulting from this policy. To complete such an evaluation, a similar set of results would be required for operating costs. Where, for example, the present value of additional costs resulting from a change in the effluent standards exceed that of the additional benefits of such a change, the standards are too stringent and should be relaxed.

Chapter 2 contains a description of the nature, technology and economics of water pollution abatement in the pulp and paper industry together with a summary of the objectives of the study. The underlying assumptions and methods of obtaining estimates both of required capital expenditure and of impact measures are outlined in Chapter 3 while the following two chapters contain summaries of the impact on output and employment respectively.

2. STUDY BACKGROUND AND OBJECTIVES

2.1 Water Quality Deterioration and Abatement Technology

Water use in the pulp and paper industry

Water, in combination with wood, power and labour, constitutes a major resource input to the pulp and paper manufacturing process. Water use in this process may be categorised, following Kneese and Bower,[1/] as:

i) cooling or thermal control of machinery to ensure operating efficiency,

ii) processing or combination of water with any input or output in all phases of manufacture,

iii) boiler operation or use of water in steam production, and

iv) sanitation.

The critical transformation of this resource, which results in its degradation or loss in value to subsequent users, occurs in stage ii) above. In the wood preparation phase water is used for washing the logs and, in the form of high-pressure sprays, for barking. In chemical pulping processes the dissolution and removal of lignin and other fibre binding material is effected by cooking with a dissolving liquor (acid or alkaline in sulphite or kraft processes, respectively) and then washing with water to remove the

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[1/] A.V. Kneese and B.T. Bower, Managing Water Quality: Economics, Technology, Institutions, RFF, Johns Hopkins Press. Baltimore 1968.

lignin and the cooking chemicals. The pulp may be screened, bleached and washed with water several times depending on the colour required. Finally, a mixture of approximately 99.5 percent water and 0.5 percent pulp forms the input to the paper machine. In the other major pulping process, groundwood, the wood fibres are separated out by mechanical disintegration of the logs.

In pulp and paper manufacture since a very small proportion of water intake is dissipated in the production process the requirements for waste water disposal are large and water reuse in process, a form of inplant treatment, becomes a viable alternative. In 1970 the daily water intake of the pulp and paper industry was 2.417 billion gallons of which 3.6 percent was consumed. Among primary manufacturing industries the pulp and paper industry had the largest water intake, 38.5 percent, as shown in Table 2.1.

TABLE 2.1 TOTAL WATER INTAKE BY MAJOR INDUSTRIAL GROUP 1970

Industrial Group	Percent of Total Intake
Pulp and Paper	38.5
Smelting and Refining	27.1
Chemicals	9.6
Petroleum Refining	6.9
Food and Beverages	5.9
Plastics	5.5
Textiles	3.2
Concrete Products	2.8
	99.5

SOURCE: D.M. Tate. Water use in the Canadian Primary Manufacturing Industry. Water Planning and Management Branch, Inland Waters Directorate. Dept. of the Environment. Ottawa. August 1972. mimeo.

Regionally the pulp and paper industry had the largest water intake except in the Prairie and Ontario Regions. It consumed the smallest proportion of water intake in all regions except Ontario. This is shown in Table 2.

Effluent loads and conventional treatment systems

The effluent discharge of pulp and paper mills, which transforms the quality of receiving waters, given their assimilative capacity, and modifies the cost to subsequent and alternative users, consists of suspended solids, biochemical oxygen demanding substances and colouring, foam-creating or toxic material. Suspended solids, mainly inorganic waste, consist of clay particles or grit from woodroom operations, bark fines and broken fibres unchecked by plant screening systems. These materials give rise to sludge banks which occupy space otherwise inhabited by aquatic life; render watercourses aesthetically displeasing to local communities; decompose slowly and absorb oxygen otherwise usable by water purifying organisms or neccessary for the decomposition of microbiotic wastes.

Extreme imbalance between available oxygen and excessive oxygen demand in watercourses may give rise to aerobic, or septic, conditions. The organic wastes, largely in the form of spent cooking liquor containing nonfibrous material from the woodchips are the major source of biochemical oxygen demand, BOD, which is

TABLE 2.2 REGIONAL WATER USE BY INDUSTRIAL GROUP

INDUSTRIAL GROUP	PACIFIC		PRAIRIE		ONTARIO		QUEBEC		ATLANTIC	
	Water Intake % of Regional Total	Consumption % of Regional Water Intake	Water Intake % of Regional Total	Consumption % of Regional Water Intake	Water Intake % of Regional Total	Consumption % of Regional Water Intake	Water Intake % of Regional Total	Consumption % of Regional Water Intake	Water Intake % of Regional Total	Consumption % of Regional Water Intake
Pulp & Paper	64.7	3.5	16.4	2.3	23.2	14.3	44.3	3.6	59.5	3.1
Smelting and Refining	24.5	5.1	54.6	2.6	31.7	6.5	18.2	6.9	11.4	7.0
Petroleum Refining	4.9	15.2	5.7	15.1	9.7	15.0	3.7	15.2	11.2	15.2
Chemicals and Plastics	0.3	13.3	8.6	12.2	25.2	8.3	16.2	9.0	4.3	8.5
Food and Beverages	3.2	7.9	9.9	8.9	5.2	9.3	5.4	9.4	11.5	7.9
Textiles, Leather and Rubber	0.0	12.5	0.1	5.6	2.3	6.9	9.4	6.9	0.6	9.4
Concrete	2.4	10.1	4.7	10.7	2.7	11.1	2.8	11.4	1.5	16.5
TOTAL	100.0	4.8	100.0	5.1	100.0	7.6	100.0	6.4	100.0	5.9

SOURCE: D.M. Tate. "Water Use in the Canadian Primary Manufacturing Industry". Water Planning and Management Branch, Inland Waters Directorate. Dept. of the Environment. Ottawa. August 1972. mimeo.

the amount of oxygen required for the biological decomposition of organic solids under aerobic conditions in a specified time period (usually 5 days).

Colour and acidity problems also emanate from discharges of spent cooking liquor. The intensity of the problem varies with the pulping process in use. High colour and foaming intensity are characteristic of kraft pulping liquid wastes while acidity and, to a lesser extent, colour are associated with the spent cooking liquor of the sulphite process.

In Table 2.3 below, some indication is provided of the waste discharges of water, BOD and suspended solids per unit of input or output in the various pulp and paper manufacturing processes.

TABLE 2.3 COMPARATIVE WASTE DISCHARGES

Industry	Unit of Input or Output	Waste Water (gals.per unit)	B.O.D. (ppm)a	Suspended Solids (ppm)
Groundwood pulp	1 ton dry pulp	12,000	645	n.d.[b]
Soda pulp	1 ton dry pulp	58,000	110	1,720
Sulfate (kraft) pulp	1 ton dry pulp	64,000	123	n.d.
Sulfite pulp	1 ton dry pulp	48,000	443	n.d.
Paper mill	1 ton paper	40,000	19	452
Paperboard	1 ton paperboard	14,000	121	660

SOURCE: E.A. Ackerman and G.O.G. Lof, Technology in American Water Development Baltimore: Johns Hopkins Press, 1959. p. 130

[a]ppm = Parts per million

[b]n.d. - no data

A conventional effluent treatment system for a pulp and paper mill may be defined to consist of three major areas, namely; (1) inplant treatment or recovery system, (2) outplant treatment and (3) a sewer collection system.

Inplant treatment may take the form of (i) conversion to a higher yield production system which may involve some modification of internal circuits, or (ii) of conversion in process or (iii) conversion in fuels or (iv) some combination of the above.

The modification of internal circuits to convert to higher yield production involves firstly recycling any wastes which can be reused into the production system such as the refining and recycling of coarse particles and the reuse of white water. The actual method of recycling may follow a number of stages such as the collection of spills, the use of save-alls for fibre recovery and piping to recirculate white water where it was previously discarded.

Where extremely high levels of waste discharge exist, and this is most likely in the case of older sulphite mills, inplant treatment may take the form of a conversion in process. For any such mill three broad options are available. Firstly, the very costly installation of a chemical recovery system may be effected, or secondly the cessation of pulp production and production of newsprint only by buying pulp from other mills or, finally, the shutdown of all operations.

Yet another form of in-plant treatment is that of conversion in fuels. This usually involves conversion from coal to gas or oil. Alterations to boilers and fuel storage facilities would be undertaken.

Outplant treatment consists of primary treatment, the removal of suspended solid wastes, secondary treatment, the reduction of BOD and sludge disposal.[2/]

In primary treatment solids separation is executed with a circular clarifier equipped with a mechanical sludge collector. Secondary treatment is usually effected by an aerated lagoon or, where there is an inadequate supply of land, activated sludge is used. The disposal of wastes from primary and secondary treatment sources involves firstly dewatering, usually by vacuum filter or centrifuges and then the disposal of sludge by landfill operations or incineration in power boilers.

A sewer collection system is needed to convey wastes from various points of emission in the production system to the treatment facilities. Pumps, pipes and valves comprise the system. Monitoring devices may be attached to the system for purposes of flow recording and control to ensure operating efficiency.

2/ Tertiary treatment, the control of toxicity, colour and foam removal is not treated here because of the small attention given it to date by government and industry.

In Table 2.4 the status of the Canadian pulp and paper industry, with respect to effluent and abatement conditions in 1971 is presented. Kraft pulp mills show the highest treatment rates, 65 and 43 percent of all mills had primary and secondary treatment facilities respectively. As a result these mills reported the lowest levels of BOD 5 and suspended solids among pulp mill types. In contrast are the sulphite mills of which none had installed primary treatment facilities while one had secondary treatment and another used a municipal sewer for effluent disposal. Lack of treatment, age and inflexibility of sulphite mills probably account jointly for their reporting the largest levels of BOD 5, total dissolved solids and water consumption. Data on the number of mills and total daily production for each mill category, reflect the present concentration of pulp production in kraft mills rather than sulphite mills which have proven to be less easily adapted to chemical recovery, internal water reuse and destruction of organic material in cooling liquors than kraft mills, with the exception of the newer soluble base pulping processes. Use of municipal sewers as receiving waters for mill effluent is almost totally confined to fine paper and fibre board producing mills. Of the pulp mills only one sulphite and one neutral sulphite semi chemical mill used municipal sewers perhaps reflecting the consideration, that treatment of pulp mill wastes is largely undertaken on a scale at least as large as some municipal sewer systems.

TABLE 2.4 MILL EFFLUENT[1] CONDITIONS IN THE PULP AND PAPER INDUSTRY 1971

Type of Mills	Number of Mills	Mills With Primary Treatment	Mills With Secondary Treatment	Mills Using Municipal Sewers	BOD 5[2] lbs./ton	Total Dissolved Solids[3] lbs./ton	Suspended Solids[4] lbs./ton	Water Consumption[5] (U.S.Gal/ton)	Production Tons/Day
Neutral Sulphite Semi Chemical (NSSC)	6	0	0	1	140	362	141	22,660	1,318
Sulphite	8	0	1	1	782	2,388	87	79,490	3,166
Kraft	23	15	10	0	73	423	64	51,729	12,773
Fine Papers	38	5	2	13	71	85	70	29,375	3,226
Integrated Kraft	12	1	1	0	92	284	105	49,020	6,639
Fibre Board	11	0	1	3	43	81	44	8,903	1,042
Newsprint	34	7	0	0	156	438	91	35,878	21,180
Groundwood	8	1	1	0	135	522	67	30,781	2,849
Newsprint and Other Products	3	1	1	0	69	240	86	41,281	4,385

NOTE: Data on BOD 5, Total Dissolved Solids, Suspended Solids and Water Consumption are given as weighted averages per mill, where the weights are individual mill production, in each type of mill.

SOURCE: Paper, Fibre and Allied Products Div., Abatement and Compliance Branch, Water Pollution Control Directorate, E.P.S., D.O.E., Ottawa.

1/ with the exception of tertiary sources such as toxicity, acidity, colour and foam.

2/ lbs. of BOD 5 produced/ton of final product.

3/ lbs. of dissolved solids produced/ton of final product.

4/ lbs. of suspended solids produced/ton of final product.

5/ U.S. Gal. of water consumed/ton of final product.

2.2 Effluent Standards for the Pulp and Paper Industry

By an amendment of the Fisheries Act dated November 2, 1971, the federal government implemented the first specific body of pollution control regulations directed at any particular industry. The short title of the amendment reads; "Regulations Respecting Deleterious Substances in the Form of Effluent From Pulp and Paper Mills".[3/] The prescribed "deleterious substances" are total suspended solids, oxygen-demanding decomposible organic matter produced as waste from a mill and toxic wastes deposited by a mill. Reprints of Schedules A and B[4/] indicate the permitted deposits of suspended solids and BOD specified by law.

The stipulated continuous flow toxicity test, outlined in Schedule D, requires a survival rate of not less than 80 percent for fish which typically live in the affected watercourse when placed in water with a 65 percent effluent content for 96 hours.

New, altered or expanded mills are required to comply with the regulations from November 24, 1971. Compliance dates for existing mills are to be negotiated with each such mill. In all cases where provincial pollution control regulations are different from the federal regulations, the more stringent regulations are applicable.

3/ See "Pulp and Paper Effluent Regulations" and "Guidelines for the Pulp and Paper Effluent Regulations" Water Pollution Control Directorate. EPS. Dept. of the Environment, Ottawa, Nov. 1971 and May 1972 respectively.

4/ Ibid. p. 4.

SCHEDULE A

PERMITTED DEPOSITS OF TOTAL SUSPENDED SOLIDS IN THE EFFLUENT OF MILLS IN POUNDS PER TON*

Column I	Column II	Column III	Column IV	Column V
Component Process Category	Existing Kraft, Sulphite or Semi-Chemical Mill	New, Expanded or Altered Kraft, Sulphite or Semi-Chemical Mill	Existing Mechanical Mill	New Expanded or Altered Mechanical Mill
1. Wood rewashing	5	5	5	5
2. Debarking Hydraulic Process	5	5	5	5
3. Debarking - Wet Drum Process	10	8	10	8
4. Pulping	7	5	13	10
5. Bleaching	6	4	2	2
6. Pulp Sheet Formation	2	1	5	4
7. Integrated, Single Product Paper Making	3	2	5	4
8. Integrated, Specialty, Single-product Paper Making	6	4	10	8
9. Tissue Paper Making	15	10	20	15
10. Fine and Specialty Multi-product Paper Making	25	20	25	20
11. Cylinder Paper or Paperboard Manufacture	15	12	15	12
12. Neutral Sulphite Semi-chemical Corrugating Medium	7	7		

*"ton" means, in respect of a component process category in
(a) items 1 to 3, an oven-dry ton of wood processed without the bark,
(b) items 4 to 6, an air-dry ton of product, and
(c) items 7 to 12, a ton of product as produced.

SCHEDULE B

PERMITTED DEPOSITS OF OXYGEN-DEMANDING DECOMPOSIBLE ORGANIC MATTER IN POUNDS OF BOD PER AIR-DRY TON OF PRODUCT

Column I	Column II	Column III
Type of Process	Existing Mill	New, Altered and Expanded Mill
Sulphite pulping yield of 55% or less	255	170
Sulphite pulping yield of more than 55% and less than 65%	170	115
Sulphite pulping yield of 65% or more	150	75
Sulphite bleaching (Market pulp)	35	35
Kraft pulping	64	33
Kraft bleaching	27	27
Neutral Sulphite Semi-Chemical pulping	80	60

2.3 Effluent Standards and Resource Allocation

Economics and Water Pollution in the Pulp and Paper Industry

Water use in the pulp and paper industry was shown earlier to be depletive with respect to the alteration in quality of receiving waters, rendering them unsuitable for the requirements of further industrial or other usage without treatment. This is the nature of the technological diseconomy or externality in pulp and paper production to be examined in this study.

The optimum pollution level[5/] is that at which the marginal social benefits of abatement equal its marginal social costs, at competitive equilibrium output levels for all industries. Alternatively this level may be defined as that where the marginal costs of abatement, assuming least cost abatement functions, is equal to the marginal damages avoided, in waste reduction. Given that damages or water quality deterioration is an unintended by product of pulp and paper producing activity, how can this optimum be attained?

The methods of solution, suggested in the economic literature on this type of externality, are; (i) market solutions, (ii) effluent charges or subsidies, (iii) standards, or (iv) a combination of (ii) and (iii).

5/ For a clear informal discussion of pollution economics see L. E. Ruff 'The Economic Common Sense of Pollution' Public Interest. Spring 1970 pp. 69-85.

Where the right to use the watercourse is exclusive and transferable at zero cost, the costs of bargaining are negligible and where the polluter and victim are willing to negotiate, the externality will be internalized or entered as an opportunity cost to the party to whom the right was initially assigned. The other party will have an incentive to offer a bribe as long as the marginal cost of additional waste abatement exceeds the marginal value of additional damages avoided, or alternatively, until marginal net damages are zero. This solution would also result in the event of a merger of both parties. This simple two-party case with zero transactions and bargaining costs, attributable to Coase[6/], fails to approximate the complex conditions under which environmental externalities arise in the real world, or for pulp and paper water pollution in particular.

The parties damaged by such pollution may be many with very little in common. In such cases the costs of organization, and therefore of bargaining, may be prohibitive. Thus for environmental pollution the more realistic case is that without negotiation. Here a tax on the pollution generating activity equal to the difference between the marginal social and private damage associated with the optimal level of that activity would give the optimum pollution solution.[7/] The word damage

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6/ R. H. Coase 'The Problem of Social Cost' J. of Law and Econ., Oct. 1960, pp. 1-44. Reprinted in W. Breit and H.M. Hochman ed. 'Readings in Microeconomics. Holt, Rinehart and Winston Inc. 2nd Ed. 1971.

7/ W.J. Baumol 'On Taxation and the Control of Externalities' American Econ. Review June 1972 pp. 307-322.

here signifies both the cost to those affected by the pollution and the cost to those obligated to prevent the pollution. In the case with negotiation such a tax would not give this solution unless accompanied by compensation, equal to the proceeds of the tax, to the damaged party.[8/]

Another premise of the simple Coasian model needs to be qualified in the economic analysis of pulp and paper water pollution. This is concerned with the assumption of exclusiveness of the right to water use. Water in Canada is a common-property, multiple-purpose, multiple-user natural resource.[9/] Economic analysis of the use of such resources has revealed that unrestricted access of large numbers of independent users leads to the allocatively inefficient result of resource use up to the point where marginal cost equals average product of some variable input in combination with the resource in question given declining returns to that input.[10/] Attempts at legal delineation of rights to resource use have serious practical shortcomings associated not only with the ambiguity of such definitions but the cumbersome procedures necessary for enforcement.[11/]

8/ R. Turvey 'On Divergences Between Social Cost and Private Cost' Economics Aug. 1963 pp. 309-313. (see proof in Appendix D)

9/ Terminology adopted from A.V. Kneese 'Environmental Pollution: Economics and Policy'. Am. Econ. Rev. May 1971 pp. 153-166.

10/ H.S. Gordon "The Economic Theory of a Common Property Resource: The Fishery" Jour. of Political Economy April 1954. pp. 124-42.

11/ For a discussion of the problems of property rights and legal solutions see Kneese and Bower op.cit. pp. 84-89.

The foregoing discussion has ruled out the possibility of market solutions to environmental externalities. The taxation approach is also ruled out given the insurmountable task of estimating marginal net damages at optimum activity levels. In fact, at current activity levels, the estimation of damages is extremely difficult especially where damage functions are inseparable.[12/] Where regional water basins are managed in common by a single competitive firm the inseparability of damage functions would provide no difficulty. Here damage costs would be internalized.[13/]

In sum, the technological complexities of water pollution externalities and the prohibitive costs of organization make the costs of establishing a market for abatement so high relative to the perceived benefits of so doing for each user that government intervention is necessary.

Economic Policy and Environmental Pollution

Given the institutional constraints on the operation of markets for environmental externalities, economists have attempted to devise policy alternatives to approximate the optimum solution. Among these is the system of effluent charges. A per unit effluent charge equal to incremental damages will eliminate the externality at the optimum level

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12/ Ibid. pp. 94-96

13/ Ibid. pp. 89-94

of abatement.[14] In the case where damage functions are linear and separable, marginal damages are constant and will, at some optimum pollution level, equal the marginal cost of the minimum cost combination of abatement techniques given that marginal costs are rising. Therefore effluent charges can be levied on the generator of water pollution, without knowledge of abatement cost functions, to produce the desired result. Where damage functions are inseparable, i.e., where the marginal cost in one activity is affected by the level of another, the abatement cost functions at each interrelated area of damages must be known so that corresponding optimum abatement levels could be determined in order to set the charges. Even where damage functions are linear, estimation is extremely difficult.[15]

A somewhat different suggestion which incorporates the working of the price system but represents a compromise to the tax solution, in view of the difficulties in estimating marginal damages, has been termed 'the environmental pricing and standards approach'.[16]

14/ A system of bribes or payments to the pollution generating firm can achieve the same result. These payments will form the effective opportunity cost of pollution. However, tremendous administrative difficulties are associated with the operation of this system. See Kneese and Bower op. cit.

15/ For a comprehensive treatment of problems in the estimation of damage functions see Kneese and Bower op. cit. pp. 109-124.

16/ W. J. Baumol and W. E. Oates 'The Use of Standards and Prices for Protection of the Environment' Swedish Jour. of Econ. March 1971 pp. 42-54.

This involves the imputation of a uniform set of prices or user rates by a public authority to allow the private use of common property resources consistent with arbitrarily preset environmental standards. This approach, although it will not necessarily result in overall optimum pollution levels, is nonetheless the minimum cost method of realizing any prescribed set of standards.[17/]

The method which is an institutional datum for this study is that of effluent standards. A system of effluent standards designed to achieve some overall set of stream standards, will in general produce the same result as the standards and prices approach. Such a system will allow the standards to be met at minimum cost, again assuming profit maximizing behaviour of all waste generating firms. In the case of an extensive watercourse with a large assimilative capacity, few waste dischargers and where stream standards apply uniformly throughout, effluent standards, and not charges, would produce minimum cost resource allocation in waste reduction.[18/] Implementation of a system of effluent standards requires some prior knowledge of damages and waste reduction costs at each potential point of discharge in order to choose the standard which would minimize them. In the absence of such information, a trial and error process is necessary such that standards are varied in areas where

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17/ W. J. Baumol and W. E. Oates op. cit. Appendix. See also Kneese and Bower op. cit. and L. E. Ruff. op. cit.

18/ Kneese and Bower op. cit. p. 137.

damage and waste reduction costs associated with actual standards have been relatively low or high. Here, however, the additional cost of plant redesign in response to changing standards will have to be met.

2. 4 Objectives

The major objective of this study is that of estimating the benefits accruing to all sectors of the economy engaged in supplying and installing water pollution abatement equipment required by the pulp and paper industry for compliance with the effluent regulations. Essentially the study is concerned with the macroeconomic aspect of the pollution abatement problem. In this section the problem of social accounting for water pollution[19/] is presented as a framework with which to relate the premises outlined in previous sections of this chapter to the objectives of the study.

Let us consider the case of a less than full employment economy where effluent standards have been imposed on its only source of water pollution, the pulp and paper industry. At some level of gross output of final goods and services, which of course includes the value of pulp and paper water pollution abatement services, there will be some water quality deterioration if the standards do not require total waste reduction. This level of water resource depletion should be subtracted from gross product, as would capital consumption allowances, to provide a more reliable measure of total economic welfare.

Included in gross product at factor cost will be the total value of all intermediate inputs used in meeting the effluent standards

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19/ See M. Weinrobe 'Accounting for Pollution: Pollution Abatement and the National Product'. Land Economics, May 1973.

plus some measure of the value added in use of that fraction of water resources otherwise unusable due to pollution.

It is precisely the value of total water pollution abatement services and value added in the use of otherwise unusable water resources that are not included in current measures of gross national product at market prices and factor cost respectively. Valuation of these items by means of market prices is extremely difficult because of the common property nature of the water resource. Markets in water resource depletion, recovery or use are implicit rather than explicit where the resource is jointly supplied for multiple uses by many users.

In section 2.3 the need for the ideal operation of a system of effluent standards was discussed. The capital component of those costs, given the standards described in section 2.2, the abatement technology and effluent conditions of the Canadian pulp and paper industry in 1971, as described in section 2.1, are estimated under the assumption that all existing mills will meet the standards. Secondly the benefits associated with the capital cost of all intermediate inputs in the production of effluent treatment plant are determined. In sum, what constitutes a cost to the pulp and paper industry creates benefits in the form of returns to factors employed in supplying pollution abatement installation services and equipment.

For the water pollution policy maker in a full employment competitive economy, the total opportunity cost of diverting resources

into pollution abatement to meet prescribed standards must be weighed against the sum of direct benefits generated by expenditure on all intermediate inputs used in waste reduction plus the value added in the use of water resources otherwise unusable without treatment. Where, in response to any change in the effluent standards, the additional benefits exceed the additional costs the standards should be further adjusted in the same direction.

3. METHODOLOGY

3.1 Estimation of Capital Expenditure on Abatement

Engineering cost estimates[20/] of the materials and labour requirements for installation of water pollution abatement systems in the pulp and paper industry were provided within the framework of the following set of assumptions;

1. All pulp and paper mills operating in 1971 would comply with the Effluent Regulations;
2. Water pollution abatement technology, assumed typical of that in operation in the industry in 1971, as summarized in 2.1 above, is the same used by all mills over the period of compliance;
3. There is zero net expansion in the number of mills, or of existing mill capacity over the period of compliance.

From a detailed survey of the effluent conditions of all pulp and paper mills in 1971[21/], summarized as Table 4, the number of such mills requiring treatment was determined to be 177. Of these 100 had no primary treatment facilities; 50 were in need of secondary treatment

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20/ These estimates were provided by a team of consulting engineers from James F. MacLaren Ltd., engaged for the purposes of this study by the Water Pollution Directorate, Environmental Protection Service, Environment Canada.

21/ Coordination of the consulting work, and the use of EPS survey data on mill effluent conditions was supervised by Mr. George Mezzetta, Program Engineer, Paper, Fibre and Allied Products Division, Water Pollution Directorate, Environmental Protection Service, Environment Canada.

and 27 would need to install recovery systems.

The capital cost estimates for primary and secondary treatment were more susceptible to generalized costing procedures, and detailed specification of the required equipment, when related to the level of mill effluent flow and output rate. Generalization of recovery system components was more difficult since they depend on characteristics of individual mill process, design and location which are highly variable among mills. Nevertheless gross estimates were determined.

The materials/labour breakdowns were provided for the following major components of primary and secondary treatment systems;

PRIMARY TREATMENT

1. In-Plant Work
2. Yard Piping
3. Screen Buildings
4. Clarifiers
5. Sludge Dewatering Buildings
6. Outfalls
7. Pumping Stations

SECONDARY TREATMENT

1. In-Plant Work
2. Yard Piping
3. Pumping Stations
4. Five-Day Aerated Lagoons or Conventional Biological Treatment
5. Outfalls

All costs are given in Toronto dollars in 1970-71.

3.2 Impact Analysis of Capital Expenditure on Abatement Using the Statistics Canada Input-Output Model.

The closed output determination model of the Statistics Canada Input-Output models[22/] was used to calculate the effects on elements of the national accounts and commodity and industry outputs, of the capital expenditure estimates given in Appendix B. A formal illustration of the methodology of the model is included as Appendix C of this report.

The structural parameters of the input-output models have been calculated from the 1966 set of input-output tables which is a composite representation of the system of national accounts showing individual commodity flows from domestic production and imports to specific industries including households, final demand components and exports.

Any interpretation or use of the results of this model depend exclusively on the extent to which the structural characteristics of the Canadian economy are approximated by its assumptions and, in particular, that these characteristics have remained relatively stable since 1966. The first of the two major assumptions underlying the model is that of the linear homogeneity of industry production functions, or alternatively, that industry inputs are proportional to total industry output. The other is the fixed domestic market share assumption. This

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22/ 'The Input-Output Structure of the Canadian Economy 1961', Statistics Canada. Cat. No. 15-501. Vol. I. Occasional.

states that the output share of each industry, supplying any given commodity market, does not vary. A third assumption, the fixed import share assumption, is that for any commodity, total imports are proportional to total domestic consumption.

The impact analysis procedure of the I-O model is summarized in the following logical sequence. Expenditure on commodities used in installing pulp and paper water pollution abatement plant is adjusted for imports and indirect commodity taxes to obtain the amount spent on domestically produced commodities. This amount, domestic final demand, is then distributed among the products of industries by the market shares assumption. Expenditure on intermediate commodity requirements of industries supplying commodities to domestic final demand are calculated by use of the industry technology assumption. This expenditure is adjusted for indirect imports by the import shares assumption. The entire process is repeated with this expenditure on intermediate commodity requirements to obtain further intermediate commodity requirements until all such requirements have been exhausted. This is the 'industry output multiplier' process.

The resulting total domestic commodity requirements are used to obtain total primary industry inputs by means of the industry technology assumption. The entire adjustment process is assumed to be independent of time and of the conditions of supply of all commodities.

3.3 Measurement of Employment Benefits

The total employment generated by capital expenditure on

water pollution abatement equipment is the sum of the direct employment in the assembly or installation of such equipment and that required to produce the total domestic output generated by the expenditure on material inputs used in the construction of effluent treatment plant.

To obtain the indirect employment, total domestic output, induced by the capital expenditure estimates, is multiplied by a ratio of the total number of jobs to the total value of output. The method of calculation of the ratio is somewhat different for manufacturing industry as distinct from agriculture, mining and services.[23/] The entire operation is performed within the impact procedure of the I-O model.

The direct employment component was obtained by dividing the estimates of expenditures on labour used in the on-site construction or installation of abatement equipment, by a weighted average of basic union wage rates for major construction trades in 14 selected Canadian cities in 1970. Composite weights, indicating the average distribution of employment among the trades in those cities, based on 1961 census data, were used in calculating the average hourly wage which was found to be 4.30 dollars.[24/]

23/ For manufacturing the method described above was used for each industry. For agriculture, mining and the services, annual average wages and salaries by industry in 1969 was compared with wages and salaries and output for 1966 to derive the ratio.

24/ All data for this calculation were obtained from "Construction Price Statistics", Statistics Canada, Cat. No. 62-006 Vol. I No. 2.

4. OUTPUT EFFECTS

4.1 The Impact of Capital Expenditures, by Treatment Type, on the Summary Economic Accounts

The representation of a set of solutions of the I-O model in the form of aggregate economic accounts affords an examination of the effect of abatement expenditures on the circular flow of economic activity. Alternatively, the process may be regarded as the total adjustment in the elements of the Income and Expenditure, Household, and Business Sector accounts, required to keep them balanced, in response to the level of final demand represented by abatement expenditures.[25/] The effects on these accounts of capital expenditure by treatment type and engineering category are presented, in detail, in Appendix A.2.

An examination of the Income and Expenditure account is sufficient for the purposes of this section. This account contains a summary of the level of flows of expenditure from consumers, final demand for materials used in constructing abatement plant and other expenditure categories, and flows of income to consumers, unincorporated business and other income categories. In particular, the income aggregate, gross domestic product at factor cost, will be used as the primary indicator of impact on the level of economic activity. In Table 4.1.2 below, the impact on GDP at factor cost of expenditures on treatment type (in Table 4.1.1) by income category, is shown.

25/ see 'The Input-Output Structure of the Canadian Economy 1961' op.cit. pp. 91-96. Appendix A.1 is a guide to interpretation of the results.

TABLE 4.1.1 SUMMARY OF ESTIMATED CAPITAL EXPENDITURE ON PULP AND PAPER LIQUID WASTE TREATMENT BY TREATMENT TYPE ($000)

Expenditure Category \ Treatment Type	Primary	Secondary	Recovery
Materials	73,585	51,029	n.a.
Labour	86,682	52,934	n.a.
Total	160,267	103,963	214,000

n.a. not available (see Section 3.1)

SOURCE: 'Notes on Pulp and Paper Liquid Waste Treatment Study For Canada.' James F. Maclaren Ltd. Sept. 1972.

The columns of Table 4.1.2 show the impact on GDP by treatment type among income categories. In this distribution, the total returns to labour are, for every treatment type, larger than that of other income categories. At this level of aggregation, two general observations can be made. The first is that of the increasing labour intensity of the technology of installing pulp and paper effluent treatment plant looking from Recovery through Secondary to Primary treatment. Secondly, the effect on the gross receipts of labour, by treatment type, after consolidation of all backward linkages and inclusion of the effect of consumption spending in the 1966 I-O model, reflects this pattern. This macro distributional result is implied by the linear homogeneity of industry production functions in the I-O model.

TABLE 4.1.2 IMPACT ON GDP AT FACTOR COST OF CAPITAL EXPENDITURE ON PULP AND PAPER LIQUID WASTE TREATMENT BY TREATMENT TYPE AND INCOME CATEGORY. ($'000) 1966 I-O Model.

Income Categories \ Treatment Type	Primary	Secondary	Recovery	Total
Wages, Salaries, Supplementary Labour Income	175,443 (70.0)	113,521 (68.7)	178,145 (61.8)	467,109 (66.4)
Net Income of Unincorporated Business	20,223 (8.1)	14,271 (8.6)	25,592 (8.9)	60,086 (8.5)
Surplus	55,006 (21.9)	37,433 (22.7)	84,293 (29.3)	176,732 (25.1)
Gross Domestic Product at Factor Cost	250,672 (100.0)	165,225 (100.0)	288,030 (100.0)	703,927 (100.0)

Note: Percentages (in parentheses) may not add due to rounding.

A summary analysis of the effect on gross domestic product at factor cost of fixed outlays on mill effluent waste disposal by treatment type is shown in Table 4.1.3.

TABLE 4.1.3. DISTRIBUTION OF CAPITAL EXPENDITURE, GDP IMPACT, AND RATIO OF GDP IMPACT TO CAPITAL EXPENDITURE BY TREATMENT TYPE. 1966 I-O Model

	Primary	Secondary	Recovery	Total
Capital Expenditure on Treatment (%)	33.5	21.7	44.8	100
Impact on GDP at Factor Cost (%)	35.6	23.5	40.9	100
GDP at Factor Cost Per ($) of Capital Expenditure	1.56	1.59	1.35	1.50
Mean Capital Expenditure Per Mill Requiring Treatment ($'000)	1602.7	2079.3	7925.9	n.a.

Expenditure on the installation of Recovery plant is largest at 44.8 percent of the total, yet the returns in terms of gross domestic product per dollar of such expenditure is lowest at 1.35 dollars. In contrast, the expenditure on construction of secondary treatment facilities is lowest at 21.7 percent of the total while the gross domestic product per dollar of such expenditure is largest at 1.59 dollars. The gross domestic product per dollar of total capital expenditure is 1.50 dollars.

Although only 27 mills required recovery treatment facilities, as compared with 100 in Primary and 50 in Secondary, both the total, and the mean fixed cost of such treatment greatly exceed those of mills requiring primary and secondary treatment while the GDP per dollar of such expenditure is lowest in recovery. The implication here is that both from the viewpoint of larger gross benefit to the overall economy per dollar of fixed outlay and of lower fixed treatment cost incurred by the individual mill, transformation of the pulp and paper industry in favour of incorporation of recovery systems in initial mill design, is desirable. This judgement is based on the argument that newer mills can be more easily adapted for internal reuse of effluent and hence recovery installation costs are less. Moreover primary and secondary treatment costs are not independent of recovery costs since reuse of organic and inorganic loads in process will reduce the waste concentration in final effluent and, therefore, the need for treatment.

4.2 THE IMPACT OF CAPITAL EXPENDITURES, ON PRIMARY AND SECONDARY TREATMENT BY ENGINEERING CATEGORY, ON THE SUMMARY ECONOMIC ACCOUNTS

Within the more general category of occupations in industrial engineering and construction, it was possible to obtain the distribution of capital expenditure in primary and secondary pulp and paper liquid waste treatment among structural, architectural, mechanical and electrical trades. This distribution is shown in Table 4.2.1.

TABLE 4.2.1 ESTIMATED CAPITAL EXPENDITURE ON PRIMARY AND SECONDARY TREATMENT BY CONSTRUCTION-ENGINEERING CATEGORY ($'000).

Expenditure Category \ Construction-Engineering Category	Structural	Architectural	Mechanical	Electrica
Materials	19,250	6,323	88,406	10,637
Labour	23,399	3,161	81,799	31,256
Total	42,649	9,484	170,205	41,893

Source: Calculated from data in "Notes on Pulp and Paper Liquid Waste Treatment Study for Canada". James F. Maclaren Ltd. Ottawa. Sept. 1972.

Capital expenditure on primary and secondary treatment is largest in the mechanical trades in total as well as in materials or labour. Such expenditure is smallest in the architectural trade. The share of this expenditure on labour is relatively larger than that on materials in the electrical and structural trades but smaller in the architectural and mechanical trades. The impact of these expenditures on gross domestic product at factor cost is shown in Table 4.2.2.

Some analysis of the data contained in Tables 4.2.1 and 4.2.2 is shown in Table 4.2.3. The order of distribution of capital expenditures and GDP impact are similar among construction-engineering categories. Expenditure in the mechanical trades is $170,205,000 or 64.4 per cent of total primary and secondary treatment expenditures, while the smallest share of such expenditures is in the architectural trades with 3.6 per cent. On the other hand the number of dollars

TABLE 4.2.2 IMPACT ON GDP AT FACTOR COST OF CAPITAL EXPENDITURE ON PRIMARY AND SECONDARY TREATMENT BY CONSTRUCTION-ENGINEERING CATEGORY IN ($'000) and (%). 1966 I-O MODEL.

Income Category \ Construction Engineering Category	Structural	Architectural	Mechanical	Electrical	Total Primary and Secondary
Wages, Salaries, Supplementary Labour Income	48,518 (69.2)	9,303 (65.5)	177,196 (68.6)	53,947 (73.7)	288,964 (69.5)
Net Income of Unincorporated Business	5,516 (7.9)	1,142 (8.0)	22,125 (8.6)	5,711 (7.8)	34,494 (8.3)
Surplus	16,021 (22.9)	3,751 (26.4)	59,088 (22.9)	13,579 (18.5)	92,439 (22.2)
Gross Domestic Product at Factor Cost	70,055 (100.0)	14,196 (100.0)	258,409 (100.0)	73,237 (100.0)	415,897 (100.0)

Note: Percentages may not sum to 100 due to rounding.

TABLE 4.2.3. PERCENTAGE DISTRIBUTIONS OF CAPITAL EXPENDITURE ON PRIMARY AND SECONDARY TREATMENT AND GDP IMPACT, AND THE RATIO GDP/CAPITAL EXPENDITURE, BY CONSTRUCTION-ENGINEERING CATEGORY.

Construction-Engineering Category	Structural	Architectural	Mechanical	Electrical	Total Primary & Secondary
Capital Expenditure on Treatment (%)	16.1	3.6	64.4	15.9	100
Impact on GDP at Factor Cost (%)	16.8	3.4	62.1	17.6	100
GDP at Factor Cost Per ($) of Capital Expenditure	1.64	1.50	1.52	1.75	1.57

Source: Calculated from data in Tables 4.2.1 and 4.2.2.

Note: Percentages may not sum to 100 due to rounding.

of GDP at factor cost generated per dollar of capital expenditure shows a somewhat different pattern. The ratio is largest for electrical at 1.75 dollars, followed by structural at 1.64 dollars, while it is smallest for architectural at 1.50 dollars. The largest expenditure and overall GDP impact category, mechanical, has a ratio of 1.52 dollars which is below the total primary and secondary ratio of 1.57 dollars.

Gross returns to labour are, in general, a large share of the GDP generated by expenditure in all construction-engineering categories. Indeed, the share of these returns for all primary and secondary treatment accruing to labour is 69.5 percent, and ranges from 73.7 percent in electrical to 65.5 percent in architectural. Since the GDP impact is an aggregate value sum, the relatively higher wages in the electrical trades in construction may account partially for this large labour share.[26/]

4.3 Sectoral and Industrial Impact on Gross Domestic Product at Factor Cost of Capital Expenditure by Treatment Type

The set of solutions of the 1966 I-O Model, to be presented in this section, represent the abatement expenditure effects at two lesser degrees of aggregation of the national economy. The first is the sectoral aggregation, that is, the disaggregation of the impact

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26/ See Construction Price Statistics op.cit.

among six major sectors of the economy. These are; the agriculture, forestry and fishing, mining, manufacturing, construction, services and household sectors. The second is the Household-Industry aggregation. Here the economy is regarded as consisting of 40 industries, whose identities are shown in Appendix B.

The results may be analysed to determine the sectors of major impact and the magnitude of linkage effects on the industries comprising those sectors. In Table 4.3.1, the values of GDP at factor cost, generated by industrial sector and treatment type, are given.

Data from the fourth column of Table 4.3.1 indicate that if the GDP values generated by total capital expenditures on effluent treatment are summed for households, mining and agriculture, and forestry and fishing, they account for only 7.4 percent of the total. The remaining major 92.6 percent of total GDP is generated by services (38.0%), construction (29.6%) and manufacturing (25.0%).

It is worth noting that the construction sector is the sector of initial impact therefore total expenditures on labour used in the onsite building of abatement plants is included in the GDP generated in this sector. From the distribution of the final demand expenditures, shown in Appendix B.3, it can be seen that quite a large share is spent on the products of manufacturing industries. The inference suggested is that the largest linkage effects,

TABLE 4.3.1 SECTORAL IMPACT ON GDP OF CAPITAL EXPENDITURE BY TREATMENT TYPE IN ($'000) and (%). 1966 I-O MODEL.

Industrial Sector \ Treatment Type	Primary	Secondary	Recovery	Total
Agriculture, Forestry and Fishing	8,808 (3.5)	5,819 (3.5)	10,590 (3.7)	25,217 (3.6)
Mining	2,997 (1.2)	2,121 (1.3)	8,923 (3.1)	14,041 (2.0)
Manufacturing	55,505 (22.1)	33,827 (20.5)	86,869 (30.2)	176,201 (25.0)
Construction	90,125 (35.9)	55,320 (33.5)	62,653 (21.8)	208,098 (29.6)
Other (Services)	88,624 (35.4)	65,114 (39.4)	114,032 (39.6)	267,770 (38.0)
Households	4,613 (1.8)	3,024 (1.8)	4,962 (1.7)	12,599 (1.8)
Total	250,672 (100.0)	165,225 (100.0)	288,029 (100.0)	703,926 (100.0)

Note: Percentages (in parentheses) may not sum to 100 due to rounding.

operating through required intermediate inputs and the consumption spending effect, obtain in the Services sector.

The order of distribution of GDP impact among sectors is similar by treatment type as for total treatment expenditures with the exception of recovery where the manufacturing share (30.2%) is larger than the construction share (21.8%). The relatively larger labour intensity of the installation of primary treatment facilities, discussed in section 4.1, emerges here in the form of both the absolutely and relatively largest GDP impact on the construction sector of $90.1 million or 35.9 percent of the GDP impact of primary treatment expenditures.

The GDP impact of fixed abatement expenditure on the industrial aggregation is presented, in detailed form in Appendix B.2. Analysis of these results will be confined to those industries within which the larger share of GDP impact is concentrated. A summary of the results of this greater disaggregation is given in Tables 4.3.2 and 4.3.3. The construction industry is not further disaggregated and, therefore, the relative contribution of that industry to GDP remains as before. The large services impact can now be more closely examined. The impact on trade is the second largest among all treatment types and in total. Other services rank next. This group contains education and related services, hospitals, health services, motion picture theatres, other recreational services, professional services

TABLE 4.3.2 SHARE OF INDUSTRIAL IMPACT ON GDP OF CAPITAL EXPENDITURE BY TREATMENT TYPE (%),1966 I-O MODEL

Primary	(%)	Secondary	(%)	Recovery	(%)
Construction	35.9	Construction	33.5	Construction	21.8
Trade	10.7	Trade	11.4	Trade	11.7
Other Services	6.9	Other Services	8.8	Other Services	8.5
Finance, Insurance and Real Estate	5.9	Finance, Insurance and Real Estate	6.6	Finance, Insurance and Real Estate	6.2
Transportation and Storage	4.3	Transportation and Storage	4.6	Metal Fabricating	5.9
Owner-Occupied Dwellings	3.7	Owner-Occupied Dwellings	3.6	Transportation and Storage	5.6
Metal Fabricating	3.2	Agriculture	3.2	Non-Metallic Mineral Products	5.0
Agriculture	3.1	Electrical Products	2.2	Iron and Steel	4.2
Iron and Steel	3.0	Utilities	2.2	Owner-Occupied Dwellings	3.4
All Other Industries	23.3	All Other Industries	23.9	All Other Industries	27.7
TOTAL	100.0	TOTAL	100.0	TOTAL	100.0

TABLE 4.3.3 INDUSTRIAL DISTRIBUTION OF GDP IMPACT OF TOTAL CAPITAL EXPENDITURE ON TREATMENT. 1966 I-O MODEL

Industry	Percent of Gross Domestic Product
Construction	29.6
Trade	11.3
Other Services	8.0
Finance, Insurance and Real Estate	6.2
Transportation and Storage	4.9
Metal Fabricating	3.9
Owner-Occupied Dwellings	3.6
Non-Metallic Mineral Products	3.3
Iron and Steel	3.2
All Other Industries	26.0
TOTAL	100.0

to business, advertising services, laundries and cleaners, hotels and restaurants, other personal services, photography, miscellaneous repair and maintenance and miscellaneous services to business and persons. Transportation and storage, and finance, insurance and real estate account for 11.1 percent of the total treatment impact on gross domestic product. Apart from the impact on owner occupied buildings, that on the major intermediate input-supplying industries; iron and steel, metal fabricating and non metallic mineral products is 10.4 percent of the total treatment effect.

4.4 Sectoral and Industrial Impact on GDP at Factor Cost of Capital Expenditure on Primary and Secondary Treatment by Construction-Engineering Category

The relative contribution by sector and industry to GDP at factor cost of fixed liquid waste treatment outlays, in the pulp and paper industry, on the construction-engineering categories will now be examined. A summary of these results is contained in Tables 4.4.1 and 4.4.2.

The sectoral distribution of GDP generated in each construction-engineering trade is similar to that in total primary and secondary treatment in that over 90 percent is confined to three sectors; services (37.0%), construction (35.0%) and manufacturing (21.5%). Two exceptions to this ranking of the relative impact of these three sectors may be noted. In the electrical trades, the share of GDP generated in the sector of initial impact, construction (43.9%) is much larger than that in

TABLE 4.4.1 SECTORAL IMPACT ON GDP OF CAPITAL EXPENDITURE ON PRIMARY AND SECONDARY TREATMENT BY CONSTRUCTION-ENGINEERING ($'000) 1966 I-O MODEL

Industrial Sector \ Construction-Engineering Category	Structural	Architectural	Mechanical	Electrical	Total Primary and Secondary
Agriculture, Forestry and Fishing	2,718 (3.9)	464 (3.3)	8,960 (3.5)	2,483 (3.4)	14,625 (3.5)
Mining	989 (1.4)	220 (1.6)	3,093 (1.2)	815 (1.1)	5,117 (1.2)
Manufacturing	16,578 (23.7)	4,869 (34.3)	54,895 (21.2)	12,990 (17.7)	89,332 (21.5)
Construction	24,378 (34.8)	3,369 (23.7)	85,512 (33.1)	32,185 (43.9)	145,444 (35.0)
Other (Services)	24,115 (34.4)	5,023 (35.4)	101,230 (39.2)	23,370 (31.9)	153,738 (37.0)
Households	1,277 (1.8)	250 (1.8)	4,717 (1.8)	1,390 (1.9)	7,634 (1.8)
Total	70,055 (100.0)	14,195 (100.0)	258,407 (100.0)	73,233 (100.0)	415,890 (100.0)

Note: Percentages (in parentheses) may not sum to 100 due to rounding.

TABLE 4.4.2 INDUSTRIAL IMPACT ON GDP OF CAPITAL EXPENDITURE ON PRIMARY AND SECONDARY TREATMENT BY CONSTRUCTION ENGINEERING CATEGORY 1966 I-O MODEL

Structural	(%)	Architectural	(%)	Mechanical	(%)	Electrical	(%)
Construction	34.8	Construction	23.7	Construction	33.1	Construction	43.9
Trade	10.5	Non-Metallic Mineral Products	13.2	Trade	11.5	Trade	9.6
Other Services	6.2	Trade	10.9	Other Services	8.6	Other Services	6.1
Non-Metallic Mineral Products	5.7	Metal Fabricating	7.4	Finance, Insurance and Real Estate	6.5	Finance, Insurance and Real Estate	5.6
Finance, Insurance and Real Estate	5.7	Other Services	6.4	Transportation and Storage	4.6	Electrical Products	5.2
Transportation and Storage	4.6	Finance, Insurance and Real Estate	5.6	Iron and Steel	3.6	Owner-Occupied Dwellings	3.8
Metal Fabricating	3.8	Transportation and Storage	5.0	Owner-Occupied Dwellings	3.6	Transportation and Storage	3.3
Owner-Occupied Dwellings	3.6	Owner-Occupied Dwellings	3.5	Agriculture	3.2	Agriculture	3.1
All Other Industries	25.1	All Other Industries	24.3	All Other Industries	25.3	All Other Industries	19.4
TOTAL	100.0	TOTAL	100.0	TOTAL	100.0	TOTAL	100.0

the services or manufacturing sectors. Among construction-engineering trades, this can probably be attributed to the higher wages of electricians[27/] and the fact that in the construction sector the direct value added by labour represented 97.1 percent of the total GDP effect in that sector for the electrical category.[28/] On the other hand the GDP share in construction is smallest (23.7%) in the architectural trades. In this case the ratio of direct value added by labour to total GDP impact in construction is lowest (93.8%). Note also that in the architectural trades the GDP share in the manufacturing sector (34.3%) is the largest among construction-engineering trades.

This large GDP share in manufacturing in the use of architectural trades in the installation of primary and secondary treatment plant, can be examined in greater detail in the households-industry aggregation. Non metallic mineral products (supplying mainly concrete products) and metal fabricating industries account for 20.6 percent of the GDP effect in the architectural category. In the electrical trades, electrical products, as intermediate inputs, contribute 5.2 percent of the GDP effect in this category. In general, structural and mechanical categories show the same pattern of GDP impact, as discussed in 4.3 above, for treatment types. The construction industry, not further disaggregated, has the greatest GDP impact among all construction-engineering

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27/ See 'Construction Price Statistics' op. cit.

28/ This ratio is 95.7% in mechanical, 96.0% in structural and 93.8% in architectural.

categories largely as a result of being the industry of initial impact and because of the large ratio of labour expenditure to total GDP generated. As pointed out in footnote 28, this ratio is over 90 percent in all cases. Finally it may be observed that the major service industries, in terms of the magnitude of shares of GDP, remain as before.

4.5 Impact on Total Domestic Output of Capital Expenditures by Treatment Type and Engineering Category

Analysis of the effects on total domestic output of expenditures by the pulp and paper industry to install water pollution abatement equipment revealed approximately similar conclusions to those for gross domestic product. Over 95% of all productive activity generated is concentrated in the households, services, manufacturing and construction sectors. This is shown in Table 4.5.1 and is true for treatment types as well as construction-engineering categories of primary and secondary treatment. Some support for the conclusion discussed in section 4.3, with respect to the large consumption spending impact on services, is obtained by comparing the total output of households and services with their GDP impact (Tables 4.3.1, 4.4.1 and 4.5.1). In contrast with services and construction the share of GDP in manufacturing is always lower than its share in total output (except in the recovery and structural impact categories), implying a lesser consumption spending effect on the products of this sector.

TABLE 4.5.1 SECTORAL IMPACT ON TOTAL DOMESTIC OUTPUT OF CAPITAL EXPENDITURES BY TREATMENT TYPE AND ENGINEERING-CONSTRUCTION CATEGORY ($'000) AND (%) 1966 I-O MODEL

Expenditure Category / Sector	Primary	Secondary	Recovery	Total	Structural	Architectural	Mechanical	Electrical	Total Primary and Secondary
Agriculture, Forestry and Fishing	14,463 (2.2)	9,485 (2.2)	17,761 (1.9)	41,709 (2.0)	4,591 (2.5)	757 (2.0)	14,570 (2.1)	4,030 (2.2)	23,948 (2.2)
Mining	4,601 (0.7)	3,209 (0.7)	14,082 (1.5)	21,892 (1.1)	1,566 (0.9)	349 (0.9)	4,703 (0.7)	1,192 (0.6)	7,810 (0.7)
Manufacturing	171,012 (26.1)	102,644 (24.1)	256,917 (27.0)	530,573 (26.1)	47,837 (26.2)	12,748 (33.2)	174,199 (25.7)	38,874 (21.3)	273,658 (25.3)
Construction	92,352 (14.1)	56,861 (13.4)	221,470 (23.3)	370,683 (18.2)	25,013 (13.7)	3,502 (9.1)	87,914 (13.0)	32,785 (18.0)	149,215 (13.8)
Services	163,507 (25.0)	116,734 (27.4)	218,005 (22.9)	498,246 (24.5)	45,748 (25.1)	9,743 (25.4)	182,216 (25.9)	42,536 (23.3)	280,243 (26.0)
Households	208,218 (31.8)	136,481 (32.1)	223,966 (23.5)	568,665 (28.0)	57,606 (31.6)	11,286 (29.4)	212,903 (31.5)	62,905 (34.5)	344,700 (31.9)
Total	654,153 (100)	425,414 (100)	952,201 (100)	2,031,778 (100)	182,361 (100)	38,385 (100)	676,505 (100)	182,322 (100)	1,079,574 (100)

Note: Totals may not add due to rounding.

5. EMPLOYMENT EFFECTS

5.1 Employment Effects by Treatment Type

The overall impact on employment, of the fixed investment outlays on effluent treatment in the pulp and paper industry, is composed of direct and indirect effects. The direct component represents the employment of labour in the onsite construction of effluent treatment facilities. The indirect employment is that used in the production of all equipment needs for such construction, in addition to the employment resulting from the spending of the earnings from this production by households.

In the interpretation of the employment effects by treatment type, the direct/indirect categorization does not hold for recovery since, as pointed out in 3.1 above, the impact was given to total capital expenditure on recovery, in the absence of a materials/labour breakdown of this total. In the sectoral and industrial distribution of employment effects by treatment type shown in Tables 5.1.1 and 5.1.2 respectively, the employment impact on the construction industry (or sector) includes the amount of the direct employment which is shown separately in Table 5.1.3.

The total employment effect is concentrated in three sectors namely; services, manufacturing and construction. The employment effect in construction is largest for primary and secondary

TABLE 5.1.1 TOTAL EMPLOYMENT IMPACT OF CAPITAL EXPENDITURE ON PULP AND PAPER EFFLUENT TREATMENT BY INDUSTRIAL SECTOR AND TREATMENT TYPE (MAN-YEARS) AND (%) 1966 I-O MODEL

Sector \ Treatment Type	Primary	Secondary	Recovery	Total Treatment
Agriculture, Forestry and Fishing	317.1 (1.3)	198.3 (1.3)	445.1 (1.7)	960.4 (1.5)
Mining	124.1 (0.5)	87.5 (0.6)	563.7 (2.2)	775.2 (1.2)
Manufacturing	5,385.1 (22.6)	3,383.1 (21.5)	8,168.4 (31.3)	16,936.7 (25.8)
Construction	10,061.7 (42.1)	6,175.1 (39.3)	6,638.0 (25.5)	22,874.8 (34.8)
Services	7,987.4 (33.4)	5,880.7 (37.4)	10,237.1 (39.3)	24,105.3 (36.7)
Total	23,875.4 (100)	15,724.7 (100)	26,052.3 (100)	65,652.4 (100)

Note: Totals may not add due to rounding.

TABLE 5.1.2 DISTRIBUTION OF EMPLOYMENT IMPACT OF FIXED OUTLAY ON PULP AND PAPER EFFLUENT TREATMENT BY INDUSTRY AND TREATMENT TYPE 1966 I-O MODEL

Primary	(%)	Secondary	(%)	Recovery	(%)	Total Treatment	(%)
Construction	42.1	Construction	39.2	Construction	25.5	Construction	34.8
Trade	14.5	Trade	15.4	Trade	16.4	Trade	15.5
Other Services	8.7	Other Services	10.8	Other Services	10.3	Other Services	9.8
Finance, Insurance and Real Estate	4.2	Finance, Insurance and Real Estate	4.6	Metal Fabricating	6.0	Finance, Insurance and Real Estate	4.5
Transportation and Storage	3.8	Transportation and Storage	4.1	Transportation and Storage	5.3	Transportation and Storage	4.5
Metal Fabricating	3.3	Electrical Products	2.3	Finance,Insurance and Real Estate	4.7	Metal Fabricating	4.0
Iron and Steel	2.3	Machinery	1.9	Non-Metallic Mineral Products	4.4	Non-Metallic Mineral Products	2.8
Non-Metallic Mineral Products	2.2	Communication	1.8	Iron and Steel	3.5	Iron and Steel	2.6
All Other Industries	18.9	All Other Industries	19.8	All Other Industries	23.9	All Other Industries	21.5
TOTAL	100.0	TOTAL	100.0	TOTAL	100.0	TOTAL	100.0

treatment as a consequence of the labour intensive nature of installing water pollution abatement plants in pulp and paper mills. In particular, the greatest labour intensity of this process, for primary as compared with secondary and recovery treatment respectively, is reflected in the share of the total employment impact in construction. This share is 42.1% for primary, 39.3% for secondary and 25.5% for recovery. For some indication of the distribution of the large employment effects, by treatment type, among service and manufacturing industries, Table 5.1.2 is examined.

In the large employment impact on services,[29/] that on trade (over 14%) is largest for expenditures on all treatment types. Other services (over 8%), transportation and storage (4%) and finance, insurance and real estate (4%) accounted for the significant remainder of the services impact. The employment impact of the manufacturing sector is generated mainly in the metal fabricating, iron and steel, non-metallic mineral products (largely concrete and concrete products), electrical products and machinery industries. These latter industries accounted for the bulk of the physical equipment inputs to the construction of treatment facilities. The total direct labour input in such construction is summarized by treatment type in Table 5.1.3.

TABLE 5.1.3. DIRECT EMPLOYMENT IN ONSITE CONSTRUCTION OF EFFLUENT TREATMENT PLANT IN THE PULP AND PAPER INDUSTRY BY TREATMENT TYPE

	Primary	Secondary	Recovery	Total
Man Years	9691.6	5918.4	n.a.	15610.0
%	62.1	37.9	n.a.	100.0

29/ The service industries are Trade, Other Services, Finance, Insurance and Real Estate, Transportation and Storage, and Communications.

5.2 Employment Effects of Capital Expenditure on Primary and Secondary Treatment by Construction-Engineering Category

The qualitative and quantitative linkage effects on employment of expenditure on required equipment components of pulp and paper, primary and secondary effluent treatment systems, are examined in this section. As indicated in Section 4.4 on output effects, prior knowledge of the industrial distribution of capital expenditures, within the structural, architectural, mechanical and electrical categories, affords some judgement on the plausibility of the observed input-output linkage pattern. The judgement here is that employment effects are expected to be relatively large in the sectors or industries in which the bulk of the equipment needs of each construction-engineering category are to be met, for example, metal, concrete (non-metallic mineral) and wood products industries in the structural category, or electrical products industries in the electrical category.

Table 5.2.1 shows the concentration of total employment in sectors for all categories. A comparison of Tables 4.2.1 and 5.2.1 indicates a similar order of distribution of labour intensity with the share of the employment impact in construction by construction-engineering category. Employment required in the electrical trades is largest, followed by structural, mechanical and architectural respectively.

In Table 5.2.2 the distribution of the employment effects

TABLE 5.2.1 TOTAL EMPLOYMENT IMPACT OF CAPITAL EXPENDITURE ON PULP AND PAPER PRIMARY AND SECONDARY EFFLUENT TREATMENT BY CONSTRUCTION-ENGINEERING CATEGORY (MAN-YEARS) AND (%) 1966 I-O MODEL

Sector \ Construction-Engineering Category	Structural	Architectural	Mechanical	Electrical
Agriculture, Forestry and Fishing	119.7 (1.8)	15.7 (1.2)	299.0 (1.2)	81.0 (1.1)
Mining	46.2 (0.7)	10.3 (0.8)	127.1 (0.5)	28.0 (0.4)
Manufacturing	1,553.7 (23.5)	475.0 (35.7)	5,383.8 (22.0)	1,355.8 (18.9)
Construction	2,721.0 (41.2)	375.7 (28.2)	9,545.5 (39.0)	3,594.5 (50.2)
Services	2,170.0 (32.8)	454.4 (34.1)	9,138.0 (37.3)	2,105.7 (29.4)
Total	6,610.6 (100.0)	1,331.1 (100.0)	24,493.4 (100.0)	7,165.0 (100.0)

Note: Totals may not add due to rounding.

TABLE 5.2.2 DISTRIBUTION OF TOTAL EMPLOYMENT IMPACT OF FIXED OUTLAY ON PRIMARY AND SECONDARY TREATMENT BY INDUSTRY AND CONSTRUCTION-ENGINEERING CATEGORY 1966 I-O MODEL

Structural	(%)	Architectural	(%)	Mechanical	(%)	Electrical	(%)
Construction	41.2	Construction	28.2	Construction	39.0	Construction	50.2
Trade	14.4	Trade	14.8	Trade	15.5	Trade	12.9
Other Services	8.0	Non-Metallic Mineral Products	12.1	Other Services	10.5	Other Services	7.6
Transportation and Storage	4.1	Metal Fabricating	8.6	Finance, Insurance and Real Estate	4.5	Electrical Products	5.2
Finance, Insurance and Real Estate	4.1	Other Services	8.3	Transportation and Storage	4.1	Finance, Insurance and Real Estate	3.9
Non-Metallic Mineral Products	4.0	Transportation and Storage	4.5	Iron and Steel	2.8	Transportation and Storage	2.9
Metal Fabricating	3.8	Finance, Insurance and Real Estate	4.1	Metal Fabricating	2.6	Clothing Manufacturers	1.6
Wood Industries	1.9	Communication	1.7	Communication	1.8	Other Food & Soft Drink Industries	1.5
All Other Industries	18.5	All Other Industries	17.7	All Other Industries	19.2	All Other Industries	14.2
TOTAL	100.0	TOTAL	100.0	TOTAL	100.0	TOTAL	100.0

among industries does satisfy the above stated intuitive notions concerning the expected linkage pattern resulting from fixed outlays in each construction-engineering activity. It can also be concluded that the largest magnitude of secondary and other higher order linkage effects, including the consumer spending effect, on employment, occur in the services sector. This, as before, obtains predominantly in the trade, other services, transportation and storage, and finance, insurance and real estate industries.

Other expected employment impacts, by industry, can be observed from Table 5.2.2. Among these are the impact on non-metallic mineral products, metal fabricating and wood industries in the structural trades; on non-metallic mineral products and metal fabricating in the architectural trades; on iron and steel, and metal fabricating in the mechanical trades; and on electrical products in the electrical trades. To complete the examination of the employment effects in this industry in which the final activity occurs, the direct employment in construction must be added. This is shown in Table 5.2.3.

TABLE 5.2.3. DIRECT EMPLOYMENT IN THE CONSTRUCTION OF PRIMARY AND SECONDARY TREATMENT PLANTS IN THE PULP AND PAPER INDUSTRY BY ENGINEERING CATEGORY

	Structural	Architectural	Mechanical	Electrical
Man Years	2,616.2	353.5	9,145.7	3,494.6
%	16.7	2.3	58.6	22.4

6. ANALYSIS OF BENEFITS FROM THE USUAL FIXED OUTLAYS AS ALTERNATIVES TO EXPENDITURES ON EFFLUENT TREATMENT PLANT

In the absence of the Pulp and Paper Effluent Regulations, capital expenditure of the amount required to meet those regulations may be assumed to be distributed in the fixed outlay pattern usually adopted by that industry. In particular the average distribution of such expenditure by the pulp and paper industry over the period 1963-1970 was 25% on construction and 75% on machinery and equipment.[30/] The detailed industrial distribution of these expenditures is shown in the Final Demand Column of Appendix B.4.

Comparison of the output and employment impacts of these two alternative forms of capital expenditure is now feasible. In Table 6.1 it can be observed that while the distribution of the impact on gross domestic product among labour, unincorporated business and surplus is similar for either expenditure alternative, the GDP impact of fixed treatment expenditure greatly exceeds that of the usual pattern.

The major explanation for this is given with the aid of Table 6.2. The most important leakage from total final demand (or expenditure) in the usual capital expenditure case is that of direct

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30/ This distribution was exactly the same in 1966, the year from which the I-O tables, used for impact analysis in this study, were constructed. See Cat. No. 61-205. Statistics Canada.

TABLE 6.1 GDP IMPACT OF REQUIRED CAPITAL EXPENDITURE ON EFFLUENT TREATMENT AND OF USUAL CAPITAL EXPENDITURES OF THE SAME AMOUNT, BY THE PULP AND PAPER INDUSTRY ($'000) 1966 I-O MODEL

Income Category	Impact of Fixed Treatment Expenditure	Impact of Usual Fixed Expenditure
Wages, Salaries and Supplementary Labour Income	467,109 (66.4)	336,528 (67.1)
Net Income of Unincorporated Business	60,086 (8.5)	41,673 (8.3)
Surplus	176,732 (25.1)	122,999 (24.5)
Total	703,927 (100.0)	501,200 (100.0)

Note: See Appendix A.1 for definitions of the Income Categories.

TABLE 6.2 DISTRIBUTION OF REQUIRED CAPITAL EXPENDITURE ON EFFLUENT TREATMENT AND OF USUAL CAPITAL EXPENDITURE OF THE SAME AMOUNT, BY THE PULP AND PAPER INDUSTRY. ($'000)

	Fixed Effluent Treatment Expenditures		Usual Capital Expenditures	
Direct Imports		17,881 (3.7)		140,910 (29.5)
Indirect Commodity Taxes		6,002 (1.3)		25,538 (5.3)
Domestic Final Demand				
Wages and Salaries	139,616(29.2)		119,579(25.0)	
Other final Demand	314,819(65.8)		192,291(40.2)	
		454,435 (95.0)		311,870 (65.2)
Total		478,318 (100.0)		478,318 (100.0)

imports amounting to 29.5 percent of such expenditures. While the share of direct imports in the pollution abatement expenditure case is 3.7 percent. The effect of the much larger import leakage, and of greater indirect commodity taxes, is to make domestic final demand 95 percent of total fixed treatment expenditures and 65.2 percent of usual capital expenditure and hence the much lower impact on GDP of the latter. On examination of the distribution of direct imports in the usual fixed expenditure case (Appendix B.4), it is found that direct imports of industrial machinery represent 88.7 percent of total direct imports while expenditure on such machinery was 46.9 percent of total expenditures.

In summary the GDP impact per dollar of total expenditure is compared with the GDP impact per dollar of domestic final demand in Table 6.3.

TABLE 6.3. GDP IMPACT PER DOLLAR OF CAPITAL EXPENDITURE ON EFFLUENT TREATMENT AND OF USUAL CAPITAL EXPENDITURE BY THE PULP AND PAPER INDUSTRY. 1966 I-O MODEL

	Fixed Effluent Treatment Expenditure	Usual Fixed Expenditure
$\frac{\text{GDP Impact}}{\text{Total Fixed Expenditure}}$ ($)	1.47	1.05
$\frac{\text{GDP Impact}}{\text{Domestic Final Demand}}$ ($)	1.55	1.61

In the case where all capital equipment needs were satisfied domestically the value added per dollar of expenditure on such equipment in water pollution abatement, would be less than that in the usual fixed outlay pattern of the pulp and paper industry by six cents. This difference is very little when compared with the much greater per dollar impact on GDP of total capital expenditure on effluent treatment.

The industrial distribution of the GDP impact of both expenditure alternative is presented in Table 6.4. The greater amount of onsite production of equipment needs in the effluent treatment case results in large impacts on non-metallic mineral products and iron and steel industries whereas the impact on machinery, i.e., equipment produced offsite, is large in the usual capital expenditure case. Apart from this, the impacts are largely similar by industry.

The employment impact for both cases, is shown in Table 6.5. Total employment impact is greater in the effluent treatment case for the same reasons given above for the larger impact on GDP. Again, the industrial distribution of the employment impact is similar except for that on machinery in the usual case as compared with the employment in iron and steel and non-metallic mineral products in the effluent treatment case.

TABLE 6.4 INDUSTRIAL DISTRIBUTION OF THE GDP IMPACT OF CAPITAL EXPENDITURE ON WATER POLLUTION ABATEMENT, AND OF THE USUAL PATTERN OF CAPITAL EXPENDITURE, BY THE PULP AND PAPER INDUSTRY. 1966 I-O MODEL

GDP Impact of Fixed Treatment Expenditure	%	GDP Impact of Usual Pattern of Fixed Expenditure	%
Construction	29.6	Construction	25.3
Trade	11.3	Trade	14.4
Other Services	8.0	Other Services	6.4
Finance, Insurance and Real Estate	6.2	Finance, Insurance and Real Estate	5.9
Transportation and Storage	4.9	Machinery	5.8
Metal Fabricating	3.9	Transportation and Storage	4.6
Owner-Occupied Dwellings	3.6	Metal Fabricating	3.8
Non-Metallic Mineral Products	3.3	Owner-Occupied Dwellings	3.4
Iron and Steel	3.2	Communication	3.4
All Other Industries	26.0	All Other Industries	27.0
Total	100.0	Total	100.0

TABLE 6.5 EMPLOYMENT IMPACT OF REQUIRED CAPITAL EXPENDITURE ON EFFLUENT TREATMENT AND OF USUAL CAPITAL EXPENDITURES OF THE SAME AMOUNT, BY THE PULP AND PAPER INDUSTRY. 1966 I-O MODEL

Employment Impact of Fixed Treatment Expenditure	%	Employment Impact of Usual Fixed Expenditure	%
Construction	34.8	Construction	29.9
Trade	15.5	Trade	18.7
Other Services	9.8	Other Services	8.2
Finance, Insurance and Real Estate	4.5	Machinery	5.9
Transportation and Storage	4.5	Transportation and Storage	4.2
Metal Fabricating	4.0	Metal Fabricating	4.2
Non-Metallic Mineral Products	2.8	Finance, Insurance and Real Estate	4.2
Iron and Steel	2.6	Electrical Products	2.7
All Other Industries	21.5	All Other Industries	22.0
Total	100.0	Total	100.0
Total Employment (Man-Years)	65,652.4	Total Employment (Man-Years)	47,344.2

7. CONCLUSIONS

The pulp and paper industry, not only has the largest industrial water intake but consumes the smallest proportion of this intake. This industry, in both absolute and relative terms, is the most significant user of water as a medium for industrial waste disposal and, potentially, has the capability for inflicting considerable damage on subsequent users of this resource. The Government of Canada has taken cognisance of this capability and instituted the first industry-specific set of effluent regulations, restricting the effluent loads of pulp and paper mills to certain minimum standards. It is hoped that full compliance will be realised by 1980.

The casual observer is immediately, and perhaps intuitively, confronted with the question concerning the order of magnitude of costs to be borne by the industry in avoiding this deterioration of water quality. But this induced activity has its own associated spectrum of inputs and outputs, the benefits of which accrue, not primarily to the pulp and paper industry, but to the industries which produce those inputs. For the economy as a whole there is some sum of benefits which represents the order of positive correction which is to be applied to current estimates of water pollution abatement costs.

If all mills existing in 1970 comply with the regulations by using conventional water pollution abatement systems and assuming that the input-output structure[31/] of the Canadian economy has remained relatively stable since 1966, capital expenditure requirements of the industry, expected to be $478 million, will generate gross domestic product at factor cost valued at $704 million. Of this total, the construction industry will account for 30 percent followed by trade, other services, finance, insurance, real estate, transportation and storage which will together contribute 30 percent. The share of gross domestic product to be jointly contributed by iron, steel, non-metallic mineral products and metal fabricating industries is 10.4 percent.

In order to sustain this level of gross domestic product 50,042 man-years, in those industries providing material inputs for constructing fixed abatement plant and, in addition, 15,610 man-years of employment in the onsite construction of such plant, will be created. The ranking of industries by employment impact is similar to that for the impact on gross domestic product. The employment impact of the construction industry consists of the 15,610 man-years referred to above, plus 7,265 man-years in producing material inputs for its own use. Trade, other services, transportation, storage, finance, insurance and real estate will jointly provide 22,519 man-years while metal

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31/ This assumes that the structural estimates of the 1966 Statistics Canada Input-Output model represent the actual structure (see Ch. 3) of the economy over the period of compliance.

fabricating, iron, steel and non-metallic products industries will require 6,171 man-years.

For the economy as a whole, the gross value added and employment benefits resulting from estimated capital expenditures on pulp and paper water pollution abatement exceed those generated by the same total expenditure if spent in the pattern normally adopted by the pulp and paper industry. This conclusion is only valid where there is no corresponding policy to reduce import leakages particularly in the form of imports of industrial machinery used by pulp and paper mills. If these leakages did not exist the value added and employment benefits would be higher in the case where the pulp and paper industry invests in its usual pattern.

The value added and employment benefits in either alternative accrue up to the stage where purchased materials and equipment are installed onsite. Benefits arising from operating expenditures of either form were not considered in this study.[32/]

32/ Although the distribution of capital expenditures in the usual case does not reflect such expenditure on distribution, i.e., shipping, by the pulp and paper industry, the share of such expenditure on distribution is so small as not to affect the conclusions set out above.

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APPENDICES

A.1 Guide to the Summary Economic Accounts:

1. Given the interdependence of the economy as reflected in the input output tables, the closed model analyses the direct, indirect and induced demand generated by a change in the demand for the output of an industry or group of industries. The result is also analyzed in terms of the impact on domestic output, imports, GDP and employment.

2. Summary accounts of the results relating to:

(i) Income and Expenditure (Domestic)
(ii) Government Revenue
(iii) The Business Sector, and
(iv) The Household Sector, are shown.

3. Income and Expenditure Account

Consumer expenditure (i)	=	Consumer expenditure on goods and services (iv).
Final Demand (i)	=	Total final demand* (B.3)
Imports less duties (i)	=	Total imports (B.3) - Import duties (ii)
Government Revenue from Production (i)	=	Government goods and services (ii)

Wages and salaries and S.L.I.(i)	=	Salaries & Wages & S.L.I. (B.2) + wages and salaries and S.L.I. from (total final demand - total imports) (B.3)
Net income of unincorporated business (i)	=	net income of unincorporated business (B.2) + net income of unincorporated business (B.3)
surplus (i)	=	Surplus (B.2) + Surplus (B.3)
Taxes less subsidies (i)	=	commodity taxes (ii) + non commodity taxes (ii) + import duties (ii) - subsidies (ii).

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* Note that B.2 and B.3 are appendices.

4. Household Account

Consumers expenditure on goods and services (iv) = consumers expenditure (i)

Personal income taxes (iv) = Personal income taxes (ii)

Other transfers to government (iv) = Other transfers from households (ii)

Wages and salaries (iv) and S.L.I. (iv) = Wages & Salaries, S.L.I. (i)

Net income of unincorporated business (iv) = Net income of unincorporated business (i)

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5. Government Revenue

Commodity taxes (ii) + non - commodity taxes (ii) = Indirect taxes (B.2) + indirect commodity taxes (B.3) + other indirect taxes (B.3)

Government goods and Services (ii) = Government revenue from production (i)

Personal income taxes = Personal income taxes (iv)

subsidies (ii) = subsidies (B.2) + subsidies (B.3)

Other transfers from households (ii) = Other transfers to governments (iv)

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6. Business Sector Account

Gross production (iii) = Total domestic output (B.2 or B.3) - output of dummy industries (B.2) and intra industry outputs (B.3) - output of households (B.2)

Subsidies (iii) = subsidies (B.2) + subsidies (B.3)

Intermediate goods and services (iii) = Gross production & subsidies (iii) - indirect taxes (iii)
- wages and salaries & S.L.I. (iii)
- net income of unincorporated business (iii)
- interest & dividends paid to persons (iii)
- depletion & mining write off (iii)
- capital cost allowance (iii)
- other surplus (iii).

Indirect taxes (iii) = Indirect commodity taxes (B.3) + indirect taxes (B.2) - indirect taxes, households (B.2).

Wages and Salaries & S.L.I. (iii) = wages and salaries & S.I. L. (i) - wages and salaries & S.L.I. hhlds. (B.2)

Net income of unincorporated business (iii) = Net income of unincorporated business (i).

Interest and dividends paid to persons (iii)
+ Depletion and mining write off (iii)
+ Capital cost allowance (iii)
+ Other Surplus (iii)
= Surplus (i)

A.2 IMPACT ON SUMMARY ECONOMIC ACCOUNTS OF ALL CAPITAL EXPENDITURE ON TREATMENT

SOLUTION # 1 IMPACT ANALYSIS OF EXPENSES ON PRIMARY TREATMENT,1960 I-O MODEL.

SECTION C: INC.&EXPDT. ACCT(DOMESTIC)

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE	166797.	WAGES,SALARIES, S.L.I.	175443.
FINAL DEMAND	160294.	NET INCOME OF UNINCORP. BUS.	20223.
IMPORTS LESS DUTIES	-40942.	SURPLUS	55006.
GOVT. REVENUE FROM PRODUCTION	-2653.	G.D.P. AT FACTOR COST	250671.
		TAXES & DUTIES LESS SUBSIDIES	32822.
TOTAL	283495.		283494.

SECTION D: HOUSEHOLD ACCOUNT

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE ON G&S	166797.	WAGES& SALARIES	174972.
PERSONAL INCOME TAXES	17559.	SUPPL. LABOUR INCOME	4470.
PERSONAL SAVINGS	11990.	NET INCOME OF UNINCORP. BUS.	20223.
OTHER TRANSFERS TO GOVTS	10302.	INVESTMENT INCOME	12553.
OTHER TRANSFERS	1570.	TRANSFERS	0.
TOTAL	208218.		208217.

SECTION E: GOVERNMENT REVENUE

REVENUE	
COMMODITY TAXES	20436.
NON-COMMODITY TAXES	11461.
GOVT GOODS & SERVICES	2653.
RESOURCE TAXES	479.
IMPORT DUTIES	3131.
PERSONAL INCOME TAXES	17559.
CORPORATION TAXES	8236.
SUBSIDIES	-2205.
OTHER TRANSFERS FROM HHLDS.	10302.
TOTAL	72052.

SECTION F: BUSINESS SECTOR ACCOUNT

REVENUE		EXPENDITURE	
GROSS PRODUCTION	312472.	INTERMEDIATE GOODS & SERVICES	141185.
SUBSIDIES	2205.	INDIRECT TAXES	14116.
		WAGES,SALARIES & S.L.I.	84436.
		NET INCOME OF UNINCORP. BUS.	20223.
		INT. & DIV. PAID TO PERSONS	12553.
		DEPLETION & MINING W.-O.	1030.
		CAPITAL COST ALLOWANCE	23144.
		OTHER SURPLUS	17991.
TOTAL	314678.		314678.

SOLUTION # 2 IMPACT ANALYSIS OF EXPENSES ON SECONDARY TREATMENT,1966 I-O MODEL,

SECTION C: INC.&EXPDT. ACCT(DOMESTIC)

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE	109331.	WAGES,SALARIES, S.L.I.	113521.
FINAL DEMAND	104024.	NET INCOME OF UNINCORP. BUS.	14271.
IMPORTS LESS DUTIES	-25389.	SURPLUS	37433.
GOVT. REVENUE FROM PRODUCTION	-1787.	G.D.P. AT FACTOR COST	165224.
		TAXES & DUTIES LESS SUBSIDIES	20954.
TOTAL	186179.		186178.

SECTION D: HOUSEHOLD ACCOUNT

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE ON G&S	109331.	WAGES& SALARIES	110507.
PERSONAL INCOME TAXES	11510.	SUPPL. LABOUR INCOME	3014.
PERSONAL SAVINGS	7859.	NET INCOME OF UNINCORP. BUS.	14271.
OTHER TRANSFERS TO GOVTS	6753.	INVESTMENT INCOME	8691.
OTHER TRANSFERS	1029.	TRANSFERS	0.
TOTAL	136481.		136482.

SECTION E: GOVERNMENT REVENUE

REVENUE	
COMMODITY TAXES	12635.
NON-COMMODITY TAXES	7875.
GOVT GOODS & SERVICES	1787.
RESOURCE TAXES	296.
IMPORT DUTIES	2111.
PERSONAL INCOME TAXES	11510.
CORPORATION TAXES	5647.
SUBSIDIES	-1666.
OTHER TRANSFERS FROM HHLDS.	6753.
TOTAL	46947.

SECTION F: BUSINESS SECTOR ACCOUNT

REVENUE		EXPENDITURE	
GROSS PRODUCTION	209939.	INTERMEDIATE GOODS & SERVICES	92691.
SUBSIDIES	1666.	INDIRECT TAXES	9647.
		WAGES,SALARIES & S.L.I.	57752.
		NET INCOME OF UNINCORP. BUS.	14271.
		INT. & DIV. PAID TO PERSONS	8691.
		DEPLETION & MINING W.-O.	701.
		CAPITAL COST ALLOWANCE	15518.
		OTHER SURPLUS	12334.
TOTAL	211605.		211605.

SOLUTION # 3 IMPACT ANALYSIS OF EXPENSES ON RECOVERY 1966 I-O MODEL.

SECTION C: INC.&EXPDT. ACC'T(DOMESTIC)

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE	179412.	WAGES,SALARIES, S.L.I.	178145.
FINAL DEMAND	214000.	NET INCOME OF UNINCORP. BUS.	25592.
IMPORTS LESS DUTIES	-54058.	SURPLUS	
GOVT. REVENUE FROM PRODUCTION	-3079.	G.D.P. AT FACTOR COST	288030.
		TAXES & DUTIES LESS SUBSIDIES	48244.
TOTAL	336275.		336274.

SECTION D: HOUSEHOLD ACCOUNT

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE ON G&S	179412.	WAGES& SALARIES	168918.
PERSONAL INCOME TAXES	18887.	SUPPL. LABOUR INCOME	9225.
PERSONAL SAVINGS	12896.	NET INCOME OF UNINCORP. BUS.	25592.
OTHER TRANSFERS TO GOVTS	11082.	INVESTMENT INCOME	20232.
OTHER TRANSFERS	1689.	TRANSFERS	0.
TOTAL	223966.		223967.

SECTION E: GOVERNMENT REVENUE

REVENUE	
COMMODITY TAXES	32525.
NON-COMMODITY TAXES	14764.
GOVT GOODS & SERVICES	3079.
RESOURCE TAXES	751.
IMPORT DUTIES	3861.
PERSONAL INCOME TAXES	18887.
CORPORATION TAXES	13312.
SUBSIDIES	-2904.
OTHER TRANSFERS FROM HHLDS.	11082.
TOTAL	95355.

SECTION F: BUSINESS SECTOR ACCOUNT

REVENUE		EXPENDITURE	
GROSS PRODUCTION	647848.	INTERMEDIATE GOODS & SERVICES	335107.
SUBSIDIES	2904.	INDIRECT TAXES	32578.
		WAGES,SALARIES & S.L.I.	173492.
		NET INCOME OF UNINCORP. BUS.	25592.
		INT. & DIV. PAID TO PERSONS	20232.
		DEPLETION & MINING W.-O.	1753.
		CAPITAL COST ALLOWANCE	32920.
		OTHER SURPLUS	29079.
TOTAL	650752.		650752.

SOLUTION # 4 IMPACT ANALYSIS OF EXPENSES ON TOTAL 1966 I-O MODEL.

SECTION C: INC.&EXPDT. ACCT(DOMESTIC)

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE	455538.	WAGES,SALARIES, S.L.I.	467109.
FINAL DEMAND	478318.	NET INCOME OF UNINCORP. BUS.	60086.
IMPORTS LESS DUTIES	-120385.	SURPLUS	176732.
GOVT. REVENUE FROM PRODUCTION	-7519.	G.D.P. AT FACTOR COST	703926.
		TAXES & DUTIES LESS SUBSIDIES	102021.
TOTAL	805953.		805947.

SECTION D: HOUSEHOLD ACCOUNT

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE ON G&S	455538.	WAGES& SALARIES	450396.
PERSONAL INCOME TAXES	47956.	SUPPL. LABOUR INCOME	16709.
PERSONAL SAVINGS	32745.	NET INCOME OF UNINCORP. BUS.	60086.
OTHER TRANSFERS TO GOVTS	28137.	INVESTMENT INCOME	41475.
OTHER TRANSFERS	4288.	TRANSFERS	0.
TOTAL	568664.		568666.

SECTION E: GOVERNMENT REVENUE

REVENUE	
COMMODITY TAXES	65595.
NON-COMMODITY TAXES	34099.
GOVT GOODS & SERVICES	7519.
RESOURCE TAXES	1526.
IMPORT DUTIES	9103.
PERSONAL INCOME TAXES	47956.
CORPORATION TAXES	27195.
SUBSIDIES	-6776.
OTHER TRANSFERS FROM HHLDS.	28137.
TOTAL	214354.

SECTION F: BUSINESS SECTOR ACCOUNT

REVENUE		EXPENDITURE	
GROSS PRODUCTION	1170259.	INTERMEDIATE GOODS & SERVICES	568982.
SUBSIDIES	6776.	INDIRECT TAXES	56341.
		WAGES,SALARIES & S.L.I.	315680.
		NET INCOME OF UNINCORP. BUS.	60086.
		INT. & DIV. PAID TO PERSONS	41476.
		DEPLETION & MINING W.-O.	3484.
		CAPITAL COST ALLOWANCE	71581.
		OTHER SURPLUS	59405.
TOTAL	1177035.		1177035.

SOLUTION # 5 IMPACT ANALYSIS OF EXPENSES ON STRUCTURAL 1966 I-O MODEL.

SECTION C: INC.&EXPDT. ACCT (DOMESTIC)

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE	46146.	WAGES,SALARIES, S.L.I.	48518.
FINAL DEMAND	42649.	NET INCOME OF UNINCORP. BUS.	5516.
IMPORTS LESS DUTIES	-9080.	SURPLUS	16021.
GOVT. REVENUE FROM PRODUCTION	-736.	G.D.P. AT FACTOR COST	70054.
		TAXES & DUTIES LESS SUBSIDIES	8925.
TOTAL	78980.		78979.

SECTION D: HOUSEHOLD ACCOUNT

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE ON G&S	46146.	WAGES& SALARIES	47243.
PERSONAL INCOME TAXES	4858.	SUPPL. LABOUR INCOME	1274.
PERSONAL SAVINGS	3317.	NET INCOME OF UNINCORP. BUS.	5516.
OTHER TRANSFERS TO GOVTS	2850.	INVESTMENT INCOME	3572.
OTHER TRANSFERS	434.	TRANSFERS	0.
TOTAL	57606.		57606.

SECTION E: GOVERNMENT REVENUE

REVENUE	
COMMODITY TAXES	5661.
NON-COMMODITY TAXES	3211.
GOVT GOODS & SERVICES	736.
RESOURCE TAXES	182.
IMPORT DUTIES	658.
PERSONAL INCOME TAXES	4858.
CORPORATION TAXES	2370.
SUBSIDIES	-606.
OTHER TRANSFERS FROM HHLDS.	2850.
TOTAL	19920.

SECTION F: BUSINESS SECTOR ACCOUNT

REVENUE		EXPENDITURE	
GROSS PRODUCTION	89751.	INTERMEDIATE GOODS & SERVICES	40950.
SUBSIDIES	606.	INDIRECT TAXES	4028.
		WAGES,SALARIES & S.L.I.	23922.
		NET INCOME OF UNINCORP. BUS.	5516.
		INT. & DIV. PAID TO PERSONS	3572.
		DEPLETION & MINING W.-O.	301.
		CAPITAL COST ALLOWANCE	6892.
		OTHER SURPLUS	5176.
TOTAL	90356.		90356.

SOLUTION # 6 IMPACT ANALYSIS OF EXPENSES ON ARCHITECTURAL 1966 I-O MODEL.

SECTION C: INC.&EXPDT. ACCT(DOMESTIC)

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE	9041.	WAGES,SALARIES, S.L.I.	9303.
FINAL DEMAND	9484.	NET INCOME OF UNINCORP. BUS.	1142.
IMPORTS LESS DUTIES	-1991.	SURPLUS	3751.
GOVT. REVENUE FROM PRODUCTION	-149.	G.D.P. AT FACTOR COST	14196.
		TAXES & DUTIES LESS SUBSIDIES	2188.
TOTAL	16384.		16384.

SECTION D: HOUSEHOLD ACCOUNT

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE ON G&S	9041.	WAGES& SALARIES	8995.
PERSONAL INCOME TAXES	952.	SUPPL. LABOUR INCOME	308.
PERSONAL SAVINGS	650.	NET INCOME OF UNINCORP. BUS.	1142.
OTHER TRANSFERS TO GOVTS	558.	INVESTMENT INCOME	841.
OTHER TRANSFERS	85.	TRANSFERS	0.
TOTAL	11286.		11286.

SECTION E: GOVERNMENT REVENUE

REVENUE	
COMMODITY TAXES	1500.
NON-COMMODITY TAXES	673.
GOVT GOODS & SERVICES	149.
RESOURCE TAXES	27.
IMPORT DUTIES	144.
PERSONAL INCOME TAXES	952.
CORPORATION TAXES	551.
SUBSIDIES	-130.
OTHER TRANSFERS FROM HHLDS.	558.
TOTAL	4425.

SECTION F: BUSINESS SECTOR ACCOUNT

REVENUE		EXPENDITURE	
GROSS PRODUCTION	21046.	INTERMEDIATE GOODS & SERVICES	9529.
SUBSIDIES	130.	INDIRECT TAXES	861.
		WAGES,SALARIES & S.L.I.	5907.
		NET INCOME OF UNINCORP. BUS.	1142.
		INT. & DIV. PAID TO PERSONS	841.
		DEPLETION & MINING W.-O.	64.
		CAPITAL COST ALLOWANCE	1628.
		OTHER SURPLUS	1203.
TOTAL	21176.		21176.

SOLUTION # 7 IMPACT ANALYSIS OF EXPENSES ON MECHANICAL 1966 I-O MODEL.

SECTION C: INC.&EXPDT. ACC'T(DOMESTIC)

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE	170550.	WAGES,SALARIES, S.L.I.	177196.
FINAL DEMAND	170292.	NET INCOME OF UNINCORP. BUS.	22125.
IMPORTS LESS DUTIES	-45623.	SURPLUS	59088.
GOVT. REVENUE FROM PRODUCTION	-2777.	G.D.P. AT FACTOR COST	258409.
		TAXES & DUTIES LESS SUBSIDIES	34033.
TOTAL	292442.		292442.

SECTION D: HOUSEHOLD ACCOUNT

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE ON G&S	170550.	WAGES& SALARIES	172422.
PERSONAL INCOME TAXES	17954.	SUPPL. LABOUR INCOME	4773.
PERSONAL SAVINGS	12259.	NET INCOME OF UNINCORP. BUS.	22125.
OTHER TRANSFERS TO GOVTS	10534.	INVESTMENT INCOME	13584.
OTHER TRANSFERS	1605.	TRANSFERS	0.
TOTAL	212903.		212904.

SECTION E: GOVERNMENT REVENUE

REVENUE	
COMMODITY TAXES	20821.
NON-COMMODITY TAXES	12276.
GOVT GOODS & SERVICES	2777.
RESOURCE TAXES	454.
IMPORT DUTIES	3540.
PERSONAL INCOME TAXES	17954.
CORPORATION TAXES	8827.
SUBSIDIES	-2604.
OTHER TRANSFERS FROM HHLDS.	10534.
TOTAL	74579.

SECTION F: BUSINESS SECTOR ACCOUNT

REVENUE		EXPENDITURE	
GROSS PRODUCTION	331556.	INTERMEDIATE GOODS & SERVICES	147214.
SUBSIDIES	2604.	INDIRECT TAXES	15054.
		WAGES,SALARIES & S.L.I.	90974.
		NET INCOME OF UNINCORP. BUS.	22125.
		INT. & DIV. PAID TO PERSONS	13584.
		DEPLETION & MINING W.-O.	1073.
		CAPITAL COST ALLOWANCE	24855.
		OTHER SURPLUS	19280.
TOTAL	334161.		334161.

SOLUTION # 8 IMPACT ANALYSIS OF EXPENSES ON ELECTRICAL 1960 I-O MODEL.

SECTION C: INC.&EXPDT. ACC'T(DOMESTIC)

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE	50391.	WAGES,SALARIES, S.L.I.	53947.
FINAL DEMAND	41893.	NET INCOME OF UNINCORP. BUS.	5711.
IMPORTS LESS DUTIES	-9637.	SURPLUS	13579.
GOVT. REVENUE FROM PRODUCTION	-778.	G.D.P. AT FACTOR COST	73237.
		TAXES & DUTIES LESS SUBSIDIES	8631.
TOTAL	81869.		81868.

SECTION D: HOUSEHOLD ACCOUNT

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE ON G&S	50391.	WAGES& SALARIES	52818.
PERSONAL INCOME TAXES	5305.	SUPPL. LABOUR INCOME	1129.
PERSONAL SAVINGS	3622.	NET INCOME OF UNINCORP. BUS.	5711.
OTHER TRANSFERS TO GOVTS	3112.	INVESTMENT INCOME	3247.
OTHER TRANSFERS	474.	TRANSFERS	0.
TOTAL	62905.		62904.

SECTION E: GOVERNMENT REVENUE

REVENUE	
COMMODITY TAXES	5087.
NON-COMMODITY TAXES	3175.
GOV'T GOODS & SERVICES	778.
RESOURCE TAXES	113.
IMPORT DUTIES	900.
PERSONAL INCOME TAXES	5305.
CORPORATION TAXES	2136.
SUBSIDIES	-532.
OTHER TRANSFERS FROM HHLDS.	3112.
TOTAL	20075.

SECTION F: BUSINESS SECTOR ACCOUNT

REVENUE		EXPENDITURE	
GROSS PRODUCTION	80058.	INTERMEDIATE GOODS & SERVICES	36183.
SUBSIDIES	532.	INDIRECT TAXES	3820.
		WAGES,SALARIES & S.L.I.	21385.
		NET INCOME OF UNINCORP. BUS.	5711.
		INT. & DIV. PAID TO PERSONS	3247.
		DEPLETION & MINING W.-O.	293.
		CAPITAL COST ALLOWANCE	5286.
		OTHER SURPLUS	4666.
TOTAL	80590.		80590.

B.1 SECTORAL IMPACT OF ALL CAPITAL EXPENDITURE ON TREATMENT

SECTION B: IMPACT ANALYSIS OF EXPENSES ON PRIMARY TREATMENT,1966 I-O MODEL,

00000	STAGES OF PRODUCTION (HHLD)	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME ONINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRIC.,FOREST.,FISH(001-003)	26.	14463.	119.	1456.	5287.	2065.	317.1
00200	MINING (004-017)	245.	4601.	41.	962.	25.	2010.	124.1
00300	MANUFACTURING (018-147)	46342.	171012.	1086.	35803.	362.	19340.	5385.1
00400	CONSTRUCTION (14810-14890)	0.	5670.	25[illegible].	3004.	214.	225.	370.1
00500	OTHER (149-191)	11363.	163907.	9894.	43210.	14336.	31078.	7987.4
00600	HOUSEHOLDS	86882.	208216.	13676.	4325.	0.	280.	0.0
00700	TOTAL	144658.	567476.	25507.	88761.	20223.	55006.	14183.9

SECTION B: IMPACT ANALYSIS OF EXPENSES ON SECONDARY TREATMENT,1966 I-O MODEL,

00000 STAGES OF PRODUCTION (HHLD)	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME ONINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100 AGRIC.FOREST.FISH(001-003)	35.	9485.	85.	858.	3586.	1375.	198.3
00200 MINING (004-017)	468.	3209.	37.	692.	14.	1415.	87.5
00300 MANUFACTURING (018-147)	25472.	102644.	932.	22256.	231.	11340.	3383.1
00400 CONSTRUCTION (14810-14890)	0.	3927.	172.	2084.	148.	154.	256.7
00500 OTHER (149-191)	16833.	116734.	6775.	31862.	10292.	22960.	5880.7
00600 HOUSEHOLDS	52934.	136481.	8764.	2835.	0.	189.	0.0
00700 TOTAL	95742.	372483.	16945.	60587.	14271.	37433.	9806.3

00000	STAGES OF PRODUCTION (HHLD)	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME ONINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRIC.FOREST.FISH(001-003)	0.	17761.	217.	2304.	5862.	2424.	445.1
00200	MINING (004-017)	0.	14082.	114.	4435.	152.	4336.	563.7
00300	MANUFACTURING (018-147)	0.	256917.	2461.	54678.	553.	31638.	8168.4
00400	CONSTRUCTION (14810-14890)	214000.	221470.	15350.	54977.	628.	7048.	6638.0
00500	OTHER (149-191)	0.	218005.	11822.	57098.	18397.	38537.	10237.1
00600	HOUSEHOLDS	0.	223966.	14711.	4652.	0.	319.	0.0
00700	TOTAL	214000.	952204.	44384.	178145.	25592.	84293.	26052.3

SECTION B: IMPACT ANALYSIS OF EXPENSES ON TOTAL 1966 I-O MODEL,

00008	STAGES OF PRODUCTION (HHLD)	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRIC.FOREST.FISH(001-003)	61.	41709.	4.1.	4617.	14735.	5864.	960.4
00200	MINING (004-017)	713.	21892.	122.	6090.	191.	7760.	775.2
00300	MANUFACTURING (018-147)	71813.	530576.	5018.	112736.	1146.	62319.	16936.7
00400	CONSTRUCTION (148-148900)	214000.	231067.	15472.	60065.	589.	7427.	7264.8
00500	OTHER (149-191)	28196.	498249.	28492.	132170.	43025.	42574.	24105.3
00600	HOUSEHOLDS	139616.	568664.	37351.	11813.	0.	786.	0.0
00700	TOTA	454400.	1892163.	86916.	327493.	60086.	176732.	50042.6

SECTION B: IMPACT ANALYSIS OF EXPENSES ON STRUCTURAL 1966 I-O MODEL.

00000 STAGES OF PRODUCTION (HHLD)	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME ONINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100 AGRIC.FOREST.FISH(001-003)	10.	4591.	52.	639.	1462.	617.	119.7
00200 MINING (004-017)	29.	1566.	56.	346.	16.	627.	46.2
00300 MANUFACTURING (018-147)	15446.	47837.	339.	10292.	97.	6189.	1553.7
00400 CONSTRUCTION (14810-14890)	0.	1614.	73.	851.	61.	67.	104.8
00500 OTHER (149-191)	1838.	45748.	2733.	11794.	3880.	8441.	2170.0
00600 HOUSEHOLDS	23399.	57006.	3784.	1197.	0.	80.	0.0
00700 TOTAL	40720.	158962.	7236.	25118.	5516.	16021.	3994.4

SECTION B: IMPACT ANALYSIS OF EXPENSES ON ARCHITECTURAL 1966 I-O MODEL.

00000 STAGES OF PRODUCTION (HHLD)		DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100 AGRIC.FOREST.FISH	(001-003)	0.	757.	5.	68.	266.	110.	15.7
00200 MINING	(004-017)	0.	349.	4.	77.	3.	140.	10.3
00300 MANUFACTURING	(018-147)	5287.	12748.	146.	3095.	47.	1727.	475.0
00400 CONSTRUCTION	(14810-14890)	0.	341.	15.	181.	13.	14.	22.2
00500 OTHER	(149-191)	371.	9743.	302.	2486.	793.	1744.	454.4
00600 HOUSEHOLDS		3161.	11286.	741.	234.	0.	16.	0.0
00700 TOTAL		8820.	35224.	1473.	6142.	1142.	3751.	977.7

SECTION B: IMPACT ANALYSIS OF EXPENSES ON MECHANICAL 1966 I-O MODEL

00000 STAGES OF PRODUCTION (HHLD)	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100 AGRIC.FOREST.FISH(001-003)	50.	14570.	92.	1266.	5571.	2123.	299.0
00200 MINING (004-017)	684.	4703.	41.	1003.	18.	2072.	127.1
00300 MANUFACTURING (018-147)	43095.	174199.	15[illegible]6.	35838.	363.	18694.	5383.8
00400 CONSTRUCTION (14810-14890)	0.	6115.	268.	3245.	230.	238.	399.8
00500 OTHER (149-191)	25374.	182216.	10544.	49621.	15943.	35666.	9138.0
00600 HOUSEHOLDS	81799.	212903.	13954.	4423.	0.	294.	0.0
00700 TOTAL	151002.	594708.	26454.	95397.	22125.	59088.	15347.8

SECTION B: IMPACT ANALYSIS OF EXPENSES ON ELECTRICAL 1966 I-O MODEL

00000 STAGES OF PRODUCTION (HHLD)	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100 AGRIC.,FOREST.,FISH(001-003)	1.	4030.	24.	339.	1554.	590.	81.0
00200 MINING (004-017)	0.	1192.	15.	229.	1.	585.	28.0
00300 MANUFACTURING (018-147)	7985.	38874.	347.	8834.	86.	4070.	1355.8
00400 CONSTRUCTION (14810-14890)	0.	1529.	57.	811.	58.	60.	99.9
00500 OTHER (149-191)	615.	42536.	2832.	11171.	4012.	8187.	2105.7
00600 HOUSEHOLDS	31256.	62905.	4132.	1307.	0.	87.	0.0
00700 TOTAL	39857.	151065.	7427.	22692.	5711.	13579.	3670.4

B.2 INDUSTRIAL IMPACT OF ALL CAPITAL EXPENDITURE ON TREATMENT

SECTION B: IMPACT ANALYSIS OF EXPENSES ON PRIMARY TREATMENT, 1966 I-O MODEL.

0000-	INPUT-OUTPUT HHLD. IND AGGREGATN	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRICULTURE	0.	12425.	32.	721.	5171.	1902.	201.2
00200	FORESTRY	14.	1741.	32.	669.	34.	141.	91.6
00300	FISHING & TRAPPING	13.	297.	5.	66.	82.	22.	24.3
00400	PETROLEUM & GAS WELLS	3.	2124.	1.	183.	0.	1122.	18.2
00500	MINES	242.	2477.	-59.	779.	25.	888.	105.8
00600	MEAT PRODUCTS INDUSTRIES	186.	7672.	39.	823.	3.	316.	133.4
00700	DAIRY PRODUCTS INDUSTRIES	43.	4944.	31.	708.	15.	298.	104.8
00800	FISH PRODUCTS INDUSTRIES	6.	556.	3.	112.	1.	31.	28.4
00900	GRAIN MILLS	22.	2161.	-3.	223.	7.	220.	32.6
01000	OTHER FOOD & SOFT DRINK IND.	61.	9711.	123.	2089.	56.	1221.	369.7
01100	ALCOHOLIC BEVERAGE IND.	6.	2057.	55.	401.	0.	639.	47.9
01200	TOBACCO INDUSTRIES	2.	1772.	13.	245.	0.	268.	38.3
01300	RUBBER INDUSTRIES	24.	1697.	18.	474.	0.	269.	62.8
01400	LEATHER INDUSTRIES	4.	1566.	13.	529.	3.	36.	119.9
01500	TEXTILE INDUSTRIES	23.	6041.	54.	1580.	10.	559.	296.7
01600	CLOTHING MANUFACTURERS	7.	4979.	22.	1535.	28.	324.	374.5
01700	WOOD INDUSTRIES	2105.	3653.	30.	1074.	16.	308.	162.9
01800	FURNITURE MANUFACTURERS	204.	2111.	20.	693.	26.	220.	133.3
01900	PULP & PAPER INDUSTRIES	245.	8464.	91.	1367.	2.	815.	190.5
02000	PRINTING & PUBLISHING	15.	4281.	55.	1718.	73.	512.	269.7
02100	IRON & STEEL	9459.	35416.	187.	4261.	1.	3256.	553.4
02200	NON-FERROUS METALS	48.	3063.	25.	379.	1.	175.	75.2
02300	METAL FABRICATING	12866.	18551.	2[illegible].	5598.	41.	2393.	788.2
02400	MACHINERY	3362.	5101.	38.	1463.	3.	686.	199.7
02500	MOTOR VEHICLES	1842.	8657.	72.	1533.	2.	593.	130.7
02600	OTHER TRANSPORTATION EQUIPMENT	358.	1137.	12.	373.	2.	115.	50.3
02700	ELECTRICAL PRODUCTS	3070.	7625.	67.	2270.	1.	853.	318.4
02800	NON-METALLIC MINERAL PRODUCTS	11362.	14914.	274.	3523.	36.	3275.	521.0
02900	PETROLEUM & COAL PRODUCTS	11.	4978.	37.	316.	0.	362.	27.5
03000	INDUSTRIAL CHEMICALS	27.	1651.	34.	320.	0.	439.	34.4
03100	CHEMICAL PRODUCTS	75.	4536.	52.	983.	2.	614.	125.9
03200	MISCELLANEOUS MANUFACTURERS	910.	3722.	38.	1215.	28.	537.	195.2
03300	CONSTRUCTION	0.	5670.	250.	3004.	214.	225.	370.1
03400	TRANSPORTATION & STORAGE	686.	16430.	287.	6822.	448.	3533.	914.1
03500	COMMUNICATION	188.	6324.	-207.	2864.	0.	2194.	393.7
03600	UTILITIES	415.	5688.	98.	1326.	0.	3376.	155.2
03700	TRADE	5004.	41411.	1149.	17349.	3348.	6100.	3455.0
03800	FINANCE, INS., & REAL ESTATE	1003.	24252.	3003.	6278.	1904.	6592.	997.4
03900	OWNER-OCCUPIED DWELLINGS	0.	15275.	3992.	0.	3056.	6113.	0.0
04000	OTHER SERVICES	2449.	26828.	664.	8570.	5580.	3169.	2072.1
04100	DUMMY INDUSTRIES	1617.	27299.	968.	0.	0.	0.	0.0
04200	HOUSEHOLDS	86682.	208218.	13076.	4325.	0.	288.	0.0
04300	TOTAL	144658.	567476.	25587.	88761.	20223.	55006.	14183.9

SECTION B: IMPACT ANALYSIS OF EXPENSES ON SECONDARY TREATMENT, 1966 I-O MODEL.

0000	INPUT-OUTPUT MNLD. IND AGGREGATN	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRICULTURE	0.	8433.	22.	489.	3599.	1291.	136.6
00200	FORESTRY	5.	831.	39.	319.	16.	67.	43.7
00300	FISHING & TRAPPING	30.	221.	4.	49.	61.	17.	18.0
00400	PETROLEUM & GAS WELLS	0.	1386.	66.	120.	0.	732.	11.9
00500	MINE	468.	1823.	-29.	573.	14.	683.	75.6
00600	MEAT PRODUCTS INDUSTRIES	405.	5360.	27.	573.	7.	229.	95.3
00700	DAIRY PRODUCTS INDUSTRIES	48.	3674.	26.	469.	10.	197.	69.4
00800	FISH PRODUCTS INDUSTRIES	6.	372.	2.	75.	0.	20.	19.0
00900	GRAIN MILLS	13.	1442.	-2.	149.	5.	147.	21.7
01000	OTHER FOOD & SOFT DRINK IND.	78.	6430.	41.	1382.	37.	808.	244.6
01100	ALCOHOLIC BEVERAGE IND.	5.	1355.	36.	264.	0.	421.	31.5
01200	TOBACCO INDUSTRIES	1.	1161.	9.	160.	0.	176.	25.1
01300	RUBBER INDUSTRIES	20.	1148.	12.	322.	0.	183.	42.8
01400	LEATHER INDUSTRIES	4.	1031.	9.	348.	2.	24.	78.9
01500	TEXTILE INDUSTRIES	11.	3978.	36.	1040.	7.	368.	195.3
01600	CLOTHING MANUFACTURERS	4.	3266.	14.	1007.	18.	216.	245.7
01700	WOOD INDUSTRIES	409.	1382.	12.	407.	7.	123.	63.4
01800	FURNITURE MANUFACTURERS	469.	1720.	17.	553.	17.	230.	107.1
01900	PULP & PAPER INDUSTRIES	143.	5692.	61.	916.	1.	545.	128.1
02000	PRINTING & PUBLISHING	9.	2974.	38.	1193.	51.	356.	187.3
02100	IRON & STEEL	3728.	15078.	84.	1855.	0.	1394.	238.6
02200	NON-FERROUS METALS	8.	3027.	21.	353.	1.	161.	67.7
02300	METAL FABRICATING	2735.	6407.	68.	1967.	16.	787.	276.9
02400	MACHINERY	6194.	7456.	52.	2169.	5.	961.	296.7
02500	MOTOR VEHICLES	103.	4392.	36.	783.	1.	301.	66.9
02600	OTHER TRANSPORTATION EQUIPMENT	250.	796.	8.	271.	1.	73.	35.9
02700	ELECTRICAL PRODUCTS	5900.	9284.	81.	2588.	1.	1109.	364.1
02800	NON-METALLIC MINERAL PRODUCTS	3445.	4908.	89.	1207.	12.	1059.	177.5
02900	PETROLEUM & COAL PRODUCTS	12.	3265.	24.	208.	0.	238.	18.1
03000	INDUSTRIAL CHEMICALS	15.	1094.	22.	212.	0.	290.	22.8
03100	CHEMICAL PRODUCTS	42.	3020.	45.	654.	1.	409.	83.3
03200	MISCELLANEOUS MANUFACTURERS	1416.	3334.	39.	1129.	31.	515.	179.2
03300	CONSTRUCTION	0.	3927.	172.	2084.	148.	154.	256.7
03400	TRANSPORTATION & STORAGE	1584.	11331.	97.	4827.	278.	2477.	643.2
03500	COMMUNICATION	199.	4488.	-226.	2075.	0.	1528.	283.0
03600	UTILITIES	964.	4367.	78.	1018.	0.	2597.	119.3
03700	TRADE	5369.	29125.	982.	12205.	2342.	4306.	2422.2
03800	FINANCE, INS., & REAL ESTATE	2329.	17984.	2282.	4529.	1473.	4910.	720.1
03900	OWNER-OCCUPIED DWELLINGS	0.	10012.	2617.	0.	2003.	4007.	0.0
04000	OTHER SERVICES	5688.	21882.	457.	7207.	4196.	3135.	1692.8
04100	DUMMY INDUSTRIES	702.	17547.	669.	0.	0.	0.	0.0
04200	HOUSEHOLDS	52934.	136481.	8964.	2835.	0.	189.	0.0
04300	TOTAL	95742.	372483.	16945.	60587.	14271.	37433.	9806.3

SECTION B: IMPACT ANALYSIS OF EXPENSES ON RECOVERY (58260).1966 I-O MODEL.

0000	INPUT-OUTPUT MNLO. IND AGGREGATN	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRICULTURE	0.	13696.	35.	795.	5700.	2096.	221.8
00200	FORESTRY	0.	3742.	177.	1437.	73.	304.	196.8
00300	FISHING & TRAPPING	0.	324.	5.	72.	89.	24.	26.4
00400	PETROLEUM & GAS WELLS	0.	2821.	134.	243.	0.	1490.	24.2
00500	MINE	0.	11261.	-30.	4192.	152.	2846.	539.5
00600	MEAT PRODUCTS INDUSTRIES	0.	8280.	83.	888.	10.	336.	143.2
00700	DAIRY PRODUCTS INDUSTRIES	0.	5418.	33.	776.	16.	328.	114.8
00800	FISH PRODUCTS INDUSTRIES	0.	621.	4.	126.	1.	34.	31.8
00900	GRAIN MILLS	0.	2427.	-44.	250.	8.	247.	36.5
01000	OTHER FOOD & SOFT DRINK IND.	0.	10599.	134.	2275.	61.	1330.	402.5
01100	ALCOHOLIC BEVERAGE IND.	0.	2315.	91.	447.	0.	724.	53.6
01200	TOBACCO INDUSTRIES	0.	1910.	14.	264.	0.	289.	41.3
01300	RUBBER INDUSTRIES	0.	3605.	44.	988.	1.	589.	128.8
01400	LEATHER INDUSTRIES	0.	1756.	15.	593.	4.	41.	134.5
01500	TEXTILE INDUSTRIES	0.	7038.	84.	1842.	12.	649.	343.8
01600	CLOTHING MANUFACTURERS	0.	5403.	43.	1665.	33.	357.	406.4
01700	WOOD INDUSTRIES	0.	8232.	73.	2323.	355.	910.	365.4
01800	FURNITURE MANUFACTURERS	0.	2422.	23.	797.	30.	248.	153.2
01900	PULP & PAPER INDUSTRIES	0.	11193.	121.	1810.	3.	1088.	250.8
02000	PRINTING & PUBLISHING	0.	5519.	70.	2215.	94.	660.	347.7
02100	IRON & STEEL	0.	56995.	442.	6687.	4.	5268.	913.3
02200	NON-FERROUS METALS	0.	6840.	53.	836.	2.	380.	162.0
02300	METAL FABRICATING	0.	37516.	463.	11334.	73.	5450.	1565.6
02400	MACHINERY	0.	7664.	54.	2223.	4.	1046.	303.0
02500	MOTOR VEHICLES	0.	8128.	66.	1504.	2.	580.	136.3
02600	OTHER TRANSPORTATION EQUIPMENT	0.	1464.	6.	492.	2.	142.	66.1
02700	ELECTRICAL PRODUCTS	0.	9355.	76.	2237.	1.	1120.	317.6
02800	NON-METALLIC MINERAL PRODUCTS	0.	29385.	526.	7642.	102.	6665.	1143.6
02900	PETROLEUM & COAL PRODUCTS	0.	6805.	53.	448.	0.	516.	40.2
03000	INDUSTRIAL CHEMICALS	0.	2906.	60.	563.	0.	772.	60.3
03100	CHEMICAL PRODUCTS	0.	7313.	84.	1622.	3.	1006.	205.2
03200	MISCELLANEOUS MANUFACTURERS	0.	5813.	56.	1829.	36.	861.	300.6
03300	CONSTRUCTION	214000.	221470.	15050.	54977.	6288.	7048.	6638.0
03400	TRANSPORTATION & STORAGE	0.	24765.	421.	10233.	671.	5163.	1370.8
03500	COMMUNICATION	0.	7871.	-261.	3564.	0.	2735.	489.6
03600	UTILITIES	0.	6902.	114.	1610.	0.	4100.	188.1
03700	TRADE	0.	52022.	1399.	21824.	4103.	7791.	4279.4
03800	FINANCE, INS., & REAL ESTATE	0.	29239.	3557.	7643.	2234.	8025.	1213.7
03900	OWNER-OCCUPIED DWELLINGS	0.	16430.	4694.	0.	3287.	6576.	0.0
04000	OTHER SERVICES	0.	36443.	730.	12225.	8102.	4147.	2695.5
04100	DUMMY INDUSTRIES	0.	44334.	1568.	0.	0.	0.	0.0
04200	HOUSEHOLDS	0.	223966.	14711.	4652.	0.	310.	0.0
04300	TOTAL	214000.	952204.	44384.	178145.	25592.	84293.	26052.3

SECTION B: IMPACT ANALYSIS OF EXPENSES ON TOTAL 1966 I-O MODEL

00000	INPUT-OUTPUT RMLD. IND AGGREGATN	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME ONINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRICULTURE	0.	34553.	58.	2005.	14380.	5289.	559.5
00200	FORESTRY	18.	6314.	298.	2425.	124.	513.	332.2
00300	FISHING & TRAPPING	43.	842.	4.	187.	231.	63.	68.7
00400	PETROLEUM & GAS WELLS	3.	6331.	300.	546.	0.	3343.	54.4
00500	MINE	710.	15561.	-118.	5544.	191.	4417.	720.9
00600	MEAT PRODUCTS INDUSTRIES	591.	21312.	199.	2284.	25.	884.	371.9
00700	DAIRY PRODUCTS INDUSTRIES	91.	13635.	85.	1954.	41.	823.	289.0
00800	FISH PRODUCTS INDUSTRIES	13.	1549.	1.	314.	2.	85.	79.2
00900	GRAIN MILLS	35.	6029.	-10.	622.	20.	615.	90.8
01000	OTHER FOOD & SOFT DRINK IND.	139.	26740.	338.	5746.	153.	3359.	1016.7
01100	ALCOHOLIC BEVERAGE IND.	10.	5726.	151.	1112.	0.	1784.	133.1
01200	TOBACCO INDUSTRIES	3.	4843.	36.	668.	0.	733.	104.8
01300	RUBBER INDUSTRIES	44.	6450.	67.	1783.	1.	1041.	234.4
01400	LEATHER INDUSTRIES	7.	4354.	36.	1470.	9.	101.	333.3
01500	TEXTILE INDUSTRIES	34.	17057.	155.	4463.	28.	1576.	835.8
01600	CLOTHING MANUFACTURERS	11.	13647.	59.	4206.	75.	902.	1026.7
01700	WOOD INDUSTRIES	2514.	13267.	115.	3804.	78.	1341.	591.7
01800	FURNITURE MANUFACTURERS	674.	6253.	59.	2043.	73.	698.	393.7
01900	PULP & PAPER INDUSTRIES	388.	25348.	274.	4093.	6.	2449.	569.4
02000	PRINTING & PUBLISHING	24.	12774.	163.	5127.	218.	1528.	804.7
02100	IRON & STEEL	13187.	107489.	514.	12803.	5.	9918.	1705.3
02200	NON-FERROUS METALS	56.	12929.	99.	1569.	3.	716.	305.0
02300	METAL FABRICATING	15601.	62473.	757.	18899.	129.	8630.	2630.7
02400	MACHINERY	9555.	20221.	144.	5855.	12.	2693.	799.4
02500	MOTOR VEHICLES	1945.	21178.	174.	3830.	5.	1474.	334.0
02600	OTHER TRANSPORTATION EQUIPMENT	607.	3397.	36.	1135.	5.	330.	152.2
02700	ELECTRICAL PRODUCTS	8969.	26265.	224.	7095.	4.	3083.	1000.2
02800	NON-METALLIC MINERAL PRODUCTS	14807.	49207.	859.	12372.	150.	11000.	1842.1
02900	PETROLEUM & COAL PRODUCTS	24.	15048.	114.	972.	0.	1116.	85.8
03000	INDUSTRIAL CHEMICALS	42.	5650.	116.	1095.	0.	1501.	117.6
03100	CHEMICAL PRODUCTS	117.	14869.	172.	3259.	7.	2029.	414.5
03200	MISCELLANEOUS MANUFACTURERS	2326.	12869.	133.	4174.	94.	1912.	675.0
03300	CONSTRUCTION	214000.	231067.	15472.	60065.	989.	7421.	7264.8
03400	TRANSPORTATION & STORAGE	2270.	52526.	865.	21882.	1397.	11173.	2928.1
03500	COMMUNICATION	388.	18683.	-694.	8503.	0.	6457.	1166.3
03600	UTILITIES	1378.	16957.	290.	3955.	0.	10072.	462.6
03700	TRADE	10373.	122559.	3351.	51378.	9793.	18197.	10156.8
03800	FINANCE, INS., & REAL ESTATE	3332.	71475.	8841.	18450.	5612.	19528.	2931.2
03900	OWNER-OCCUPIED DWELLINGS	0.	41717.	10904.	0.	8345.	16696.	0.0
04000	OTHER SERVICES	8136.	85153.	1791.	28001.	17878.	10451.	6460.4
04100	DUMMY INDUSTRIES	2319.	89179.	3205.	0.	0.	0.	0.0
04200	HOUSEHOLDS	139616.	568664.	37351.	11813.	0.	786.	0.0
04300	TOTAL	454400.	1892163.	86916.	327493.	60086.	176732.	50042.6

SECTION B: IMPACT ANALYSIS OF EXPENSES ON STRUCTURAL 1966 I-O MODEL

0000	INPUT-OUTPUT HALO. IND AGGREGATN	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME ONINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRICULTURE	0.	3409.	9.	198.	1419.	522.	55.2
00200	FORESTRY	10.	1104.	52.	424.	22.	90.	58.1
00300	FISHING & TRAPPING	0.	78.	1.	17.	22.	6.	6.4
00400	PETROLEUM & GAS WELLS	0.	618.	29.	53.	0.	326.	5.3
00500	MINE	29.	948.	-13.	293.	16.	300.	40.8
00600	MEAT PRODUCTS INDUSTRIES	4.	2074.	11.	223.	2.	84.	35.7
00700	DAIRY PRODUCTS INDUSTRIES	8.	1365.	8.	196.	4.	82.	28.9
00800	FISH PRODUCTS INDUSTRIES	1.	153.	1.	31.	0.	8.	7.8
00900	GRAIN MILLS	6.	598.	-1.	62.	2.	61.	9.0
01000	OTHER FOOD & SOFT DRINK IND.	9.	2680.	34.	577.	15.	337.	102.0
01100	ALCOHOLIC BEVERAGE IND.	1.	568.	15.	111.	0.	177.	13.2
01200	TOBACCO INDUSTRIES	0.	490.	4.	68.	0.	74.	10.6
01300	RUBBER INDUSTRIES	4.	462.	5.	128.	0.	73.	16.3
01400	LEATHER INDUSTRIES	1.	433.	4.	146.	1.	19.	33.1
01500	TEXTILE INDUSTRIES	3.	1657.	15.	433.	3.	153.	81.5
01600	CLOTHING MANUFACTURERS	2.	1378.	6.	425.	8.	91.	103.7
01700	WOOD INDUSTRIES	2385.	2939.	24.	864.	11.	235.	126.8
01800	FURNITURE MANUFACTURERS	5.	536.	5.	177.	7.	48.	34.0
01900	PULP & PAPER INDUSTRIES	31.	2304.	25.	371.	1.	219.	52.2
02000	PRINTING & PUBLISHING	3.	1166.	15.	468.	20.	139.	73.4
02100	IRON & STEEL	1.	3831.	16.	409.	0.	345.	55.1
02200	NON-FERROUS METALS	15.	696.	6.	87.	0.	41.	17.1
02300	METAL FABRICATING	4547.	6002.	73.	1825.	11.	851.	252.3
02400	MACHINERY	460.	940.	7.	264.	1.	131.	35.9
02500	MOTOR VEHICLES	181.	2000.	16.	368.	1.	143.	33.7
02600	OTHER TRANSPORTATION EQUIPMENT	90.	308.	3.	99.	1.	34.	13.7
02700	ELECTRICAL PRODUCTS	227.	1418.	12.	391.	0.	152.	55.8
02800	NON-METALLIC MINERAL PRODUCTS	7399.	9784.	193.	1840.	5.	2176.	264.1
02900	PETROLEUM & COAL PRODUCTS	2.	1455.	11.	92.	0.	105.	8.0
03000	INDUSTRIAL CHEMICALS	7.	466.	12.	90.	0.	124.	9.7
03100	CHEMICAL PRODUCTS	15.	1312.	15.	285.	1.	181.	36.5
03200	MISCELLANEOUS MANUFACTURERS	40.	823.	8.	262.	5.	114.	43.0
03300	CONSTRUCTION	0.	1614.	73.	851.	61.	67.	104.8
03400	TRANSPORTATION & STORAGE	1.	4966.	99.	2047.	140.	1053.	274.3
03500	COMMUNICATION	0.	1678.	-44.	757.	0.	583.	104.4
03600	UTILITIES	0.	1511.	26.	352.	0.	896.	41.2
03700	TRADE	1016.	11413.	316.	4781.	922.	1682.	951.9
03800	FINANCE, INS., & REAL ESTATE	0.	6543.	795.	1705.	500.	1807.	270.7
03900	OWNER-OCCUPIED DWELLINGS	0.	4226.	1155.	0.	845.	1691.	0.0
04000	OTHER SERVICES	0.	6829.	159.	2152.	1472.	729.	527.5
04100	DUMMY INDUSTRIES	818.	8582.	278.	0.	0.	0.	0.0
04200	HOUSEHOLDS	23399.	57606.	3784.	1197.	0.	80.	0.0
04300	TOTAL	40720.	158962.	7206.	25118.	5516.	16021.	3994.4

SECTION B1 IMPACT ANALYSIS OF EXPENSES ON ARCHITECTURAL 1966 I-O MODEL.

0000	INPUT-OUTPUT HMLD. IND AGGREGATN	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRICULTURE	0.	674.	2.	39.	281.	103.	10.9
00200	FORESTRY	0.	67.	1.	26.	1.	5.	3.5
00300	FISHING & TRAPPING	0.	16.	0.	4.	4.	1.	1.3
00400	PETROLEUM & GAS WELLS	0.	133.	6.	11.	0.	70.	1.1
00500	MINE	0.	216.	-3.	66.	3.	70.	9.1
00600	MEAT PRODUCTS INDUSTRIES	1.	411.	2.	44.	0.	17.	7.1
00700	DAIRY PRODUCTS INDUSTRIES	2.	270.	2.	39.	1.	16.	5.7
00800	FISH PRODUCTS INDUSTRIES	0.	31.	0.	6.	0.	2.	1.6
00900	GRAIN MILLS	1.	118.	-0.	12.	0.	12.	1.8
01000	OTHER FOOD & SOFT DRINK IND.	2.	530.	7.	114.	3.	67.	20.2
01100	ALCOHOLIC BEVERAGE IND.	0.	114.	3.	22.	0.	36.	2.7
01200	TOBACCO INDUSTRIES	0.	96.	1.	13.	0.	15.	2.1
01300	RUBBER INDUSTRIES	1.	105.	1.	29.	0.	17.	3.9
01400	LEATHER INDUSTRIES	0.	85.	1.	29.	0.	2.	6.5
01500	TEXTILE INDUSTRIES	1.	331.	3.	87.	1.	31.	16.2
01600	CLOTHING MANUFACTURERS	0.	271.	1.	83.	1.	18.	20.4
01700	WOOD INDUSTRIES	2.	102.	1.	30.	1.	10.	4.7
01800	FURNITURE MANUFACTURERS	9.	113.	1.	37.	1.	11.	7.2
01900	PULP & PAPER INDUSTRIES	1.	500.	5.	79.	0.	47.	11.1
02000	PRINTING & PUBLISHING	1.	258.	3.	104.	4.	31.	16.3
02100	IRON & STEEL	0.	1193.	5.	125.	0.	107.	16.9
02200	NON-FERROUS METALS	1.	329.	4.	51.	0.	23.	9.6
02300	METAL FABRICATING	2018.	2500.	28.	777.	14.	254.	114.8
02400	MACHINERY	23.	128.	1.	36.	0.	20.	4.7
02500	MOTOR VEHICLES	6.	371.	3.	66.	0.	26.	5.7
02600	OTHER TRANSPORTATION EQUIPMENT	25.	74.	1.	26.	0.	6.	3.4
02700	ELECTRICAL PRODUCTS	4.	258.	2.	70.	0.	28.	9.9
02800	NON-METALLIC MINERAL PRODUCTS	3169.	3659.	62.	1051.	18.	810.	160.7
02900	PETROLEUM & COAL PRODUCTS	0.	313.	2.	20.	0.	23.	1.7
03000	INDUSTRIAL CHEMICALS	1.	110.	2.	21.	0.	29.	2.3
03100	CHEMICAL PRODUCTS	10.	296.	3.	64.	0.	42.	8.2
03200	MISCELLANEOUS MANUFACTURERS	8.	183.	2.	58.	1.	25.	9.5
03300	CONSTRUCTION	0.	341.	15.	181.	13.	14.	22.1
03400	TRANSPORTATION & STORAGE	0.	1091.	21.	448.	32.	231.	60.9
03500	COMMUNICATION	0.	370.	-11.	167.	0.	129.	22.8
03600	UTILITIES	0.	321.	5.	75.	0.	190.	8.3
03700	TRADE	198.	2381.	65.	998.	190.	354.	197.3
03800	FINANCE, INS., & REAL ESTATE	0.	1314.	161.	344.	101.	356.	54.6
03900	OWNER-OCCUPIED DWELLINGS	0.	828.	216.	0.	166.	331.	0.0
04000	OTHER SERVICES	0.	1426.	33.	454.	304.	152.	110.7
04100	DUMMY INDUSTRIES	173.	2012.	70.	0.	0.	0.	0.0
04200	HOUSEHOLDS	3161.	11286.	741.	234.	0.	16.	0.0
04300	TOTAL	8820.	35224.	1473.	6142.	1142.	3751.	977.7

SECTION B: IMPACT ANALYSIS OF EXPENSES ON MECHANICAL 1966 I-O MODEL.

0000	INPUT-OUTPUT HOLD. IND AGGREGATN	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
0010	AGRICULTURE	0.	13109.	34.	761.	5456.	2007.	212.3
0020	FORESTRY	8.	1120.	53.	430.	22.	91.	58.9
0030	FISHING & TRAPPING	44.	340.	6.	76.	94.	25.	27.8
0040	PETROLEUM & GAS WELLS	3.	2191.	14.	189.	0.	1157.	18.8
0050	MINE	681.	2511.	-53.	814.	18.	915.	108.2
0060	MEAT PRODUCTS INDUSTRIES	584.	8304.	42.	888.	10.	354.	147.3
0070	DAIRY PRODUCTS INDUSTRIES	77.	5110.	32.	732.	16.	308.	108.3
0080	FISH PRODUCTS INDUSTRIES	11.	580.	-4.	117.	1.	32.	29.7
0090	GRAIN MILLS	25.	2252.	-4.	232.	7.	230.	33.9
0100	OTHER FOOD & SOFT DRINK IND.	123.	10029.	127.	2156.	57.	1260.	381.5
0110	ALCOHOLIC BEVERAGE IND.	8.	2113.	56.	412.	0.	657.	49.2
0120	TOBACCO INDUSTRIES	2.	1812.	13.	250.	0.	274.	39.2
0130	RUBBER INDUSTRIES	37.	1812.	14.	506.	0.	288.	67.0
0140	LEATHER INDUSTRIES	6.	1609.	13.	543.	3.	37.	123.1
0150	TEXTILE INDUSTRIES	29.	6234.	98.	1630.	10.	576.	305.9
0160	CLOTHING MANUFACTURERS	8.	5098.	22.	1571.	28.	337.	383.5
0170	WOOD INDUSTRIES	125.	1622.	14.	477.	10.	151.	77.1
0180	FURNITURE MANUFACTURERS	659.	2616.	65.	844.	27.	341.	163.3
0190	PULP & PAPER INDUSTRIES	355.	9057.	98.	1466.	2.	877.	203.5
0200	PRINTING & PUBLISHING	18.	4641.	59.	1862.	79.	555.	292.3
0210	IRON & STEEL	13184.	43664.	243.	5377.	1.	4031.	695.2
0220	NON-FERROUS METALS	37.	2981.	23.	363.	1.	169.	72.5
0230	METAL FABRICATING	8984.	15176.	161.	4580.	28.	1919.	643.5
0240	MACHINERY	9024.	11020.	79.	3197.	7.	1415.	437.6
0250	MOTOR VEHICLES	1745.	8754.	73.	1544.	1.	596.	130.2
0260	OTHER TRANSPORTATION EQUIPMENT	356.	1203.	13.	399.	2.	119.	53.6
0270	ELECTRICAL PRODUCTS	1550.	6229.	51.	1695.	1.	689.	241.7
0280	NON-METALLIC MINERAL PRODUCTS	4237.	6036.	12.	1729.	25.	1289.	258.6
0290	PETROLEUM & COAL PRODUCTS	20.	5141.	38.	328.	0.	375.	28.5
0300	INDUSTRIAL CHEMICALS	31.	1727.	36.	335.	0.	459.	36.0
0310	CHEMICAL PRODUCTS	84.	4668.	54.	1011.	2.	630.	129.2
0320	MISCELLANEOUS MANUFACTURERS	1776.	4712.	55.	1594.	43.	725.	255.4
0330	CONSTRUCTION	0.	6115.	208.	3245.	230.	238.	399.8
0340	TRANSPORTATION & STORAGE	2268.	17953.	172.	7625.	445.	3916.	1016.5
0350	COMMUNICATION	388.	7055.	-335.	3245.	0.	2418.	442.9
0360	UTILITIES	1378.	6803.	120.	1586.	0.	4045.	185.8
0370	TRADE	8680.	45854.	1255.	19222.	3668.	6804.	3802.2
0380	FINANCE, INS., & REAL ESTATE	3332.	27649.	3500.	6988.	2256.	7536.	1111.0
0390	OWNER-OCCUPIED DWELLINGS	0.	15618.	4082.	0.	3124.	6251.	0.0
0400	OTHER SERVICES	8136.	33356.	702.	10955.	6450.	4696.	2579.6
0410	DUMMY INDUSTRIES	1193.	27928.	10488.	0.	0.	0.	0.0
0420	HOUSEHOLDS	81799.	212903.	13984.	4423.	0.	294.	0.0
0430	TOTAL	151002.	594708.	26434.	95397.	22125.	59088.	15347.8

SECTION B: IMPACT ANALYSIS OF EXPENSES ON ELECTRICAL 1966 I-O MODEL

0000	INPUT-OUTPUT SMLD. IND AGGREGATN	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME ONINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRICULTURE	0.	3665.	9.	213.	1525.	561.	59.3
00200	FORESTRY	1.	281.	13.	108.	6.	23.	14.8
00300	FISHING & TRAPPING	0.	84.	1.	19.	23.	6.	6.8
00400	PETROLEUM & GAS WELLS	0.	567.	27.	49.	0.	300.	4.9
00500	MINE	0.	625.	-9.	180.	1.	286.	23.2
00600	MEAT PRODUCTS INDUSTRIES	2.	2243.	12.	241.	3.	91.	38.6
00700	DAIRY PRODUCTS INDUSTRIES	4.	1473.	9.	211.	4.	89.	31.2
00800	FISH PRODUCTS INDUSTRIES	1.	164.	1.	33.	0.	9.	8.4
00900	GRAIN MILLS	3.	634.	-1.	66.	2.	65.	9.6
01000	OTHER FOOD & SOFT DRINK IND.	5.	2902.	37.	625.	17.	365.	110.5
01100	ALCOHOLIC BEVERAGE IND.	1.	616.	16.	120.	0.	191.	14.4
01200	TOBACCO INDUSTRIES	0.	535.	4.	74.	0.	81.	11.6
01300	RUBBER INDUSTRIES	2.	467.	5.	132.	0.	74.	17.8
01400	LEATHER INDUSTRIES	0.	471.	4.	159.	1.	11.	36.1
01500	TEXTILE INDUSTRIES	2.	1797.	16.	471.	3.	167.	88.4
01600	CLOTHING MANUFACTURERS	1.	1498.	7.	462.	8.	99.	112.7
01700	WOOD INDUSTRIES	2.	371.	3.	115.	2.	35.	17.7
01800	FURNITURE MANUFACTURERS	1.	567.	5.	187.	8.	50.	36.0
01900	PULP & PAPER INDUSTRIES	2.	2294.	25.	368.	1.	217.	51.8
02000	PRINTING & PUBLISHING	2.	1191.	15.	478.	20.	142.	75.0
02100	IRON & STEEL	1.	1806.	8.	205.	0.	166.	27.8
02200	NON-FERROUS METALS	1.	2083.	13.	231.	0.	103.	43.7
02300	METAL FABRICATING	52.	1280.	11.	382.	4.	151.	54.5
02400	MACHINERY	49.	469.	3.	135.	0.	81.	18.0
02500	MOTOR VEHICLES	13.	1924.	16.	337.	0.	130.	28.1
02600	OTHER TRANSPORTATION EQUIPMENT	136.	348.	4.	119.	1.	30.	15.5
02700	ELECTRICAL PRODUCTS	7188.	9004.	83.	2702.	1.	1094.	375.1
02800	NON-METALLIC MINERAL PRODUCTS	2.	342.	6.	109.	1.	59.	15.1
02900	PETROLEUM & COAL PRODUCTS	1.	1335.	1.	84.	0.	96.	7.3
03000	INDUSTRIAL CHEMICALS	4.	442.	9.	86.	0.	117.	9.2
03100	CHEMICAL PRODUCTS	8.	1280.	15.	277.	1.	174.	35.3
03200	MISCELLANEOUS MANUFACTURERS	502.	1338.	12.	431.	9.	187.	66.4
03300	CONSTRUCTION	0.	1529.	67.	811.	58.	60.	99.9
03400	TRANSPORTATION & STORAGE	1.	3750.	92.	1529.	108.	811.	206.4
03500	COMMUNICATION	0.	1709.	-43.	772.	0.	592.	106.6
03600	UTILITIES	0.	1421.	24.	331.	0.	941.	38.7
03700	TRADE	479.	10888.	315.	4553.	510.	1567.	925.8
03800	FINANCE, INS., & REAL ESTATE	0.	6731.	828.	1771.	521.	1803.	281.2
03900	OWNER-OCCUPIED DWELLINGS	0.	4615.	1206.	0.	923.	1847.	0.0
04000	OTHER SERVICES	0.	7098.	168.	2215.	1550.	727.	547.0
04100	DUMMY INDUSTRIES	136.	6324.	241.	0.	0.	0.	0.0
04200	HOUSEHOLDS	31256.	62905.	4132.	1307.	0.	87.	0.0
04300	TOTAL	39857.	151065.	7420.	22692.	5711.	13579.	3670.4

B.3 DISTRIBUTION OF IMPACT TO FINAL DEMAND, INDIRECT IMPORTS AND TOTAL DOMESTIC OUTPUT

SECTION A: IMPACT ANALYSIS OF EXPENSES ON PRIMARY TREATMENT,1966 I-O MODEL,

0000	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
00100	GRAI	0.	0.	0.	117.	5.	0.	676.
00200	OTHER AGRICULTURE	0.	0.	0.	1213.	42.	22.	11477.
00300	FOREST PRODUCTS	0.	0.	0.	52.	0.	0.	1653.
00400	FISHING & TRAPPING PRODUCTS	0.	0.	0.	95.	1.	0.	283.
00500	CRUDE PETROLEUM	0.	0.	0.	1457.	0.	0.	1760.
00600	NATURAL GAS	0.	0.	0.	71.	5.	0.	212.
00900	IRON ORE	0.	0.	0.	355.	0.	0.	117.
01000	ASBESTOS	0.	0.	0.	2.	0.	0.	8.
01100	OTHER MINERALS	0.	0.	0.	457.	2.	0.	1761.
01200	MEAT PRODUCTS	0.	0.	0.	430.	19.	0.	9296.
01300	DAIRY PRODUCTS	0.	0.	0.	105.	17.	0.	4846.
01400	FISH PRODUCTS	0.	0.	0.	77.	8.	0.	523.
01500	FEED	0.	0.	0.	13.	1.	0.	1195.
01600	FLOUR & WHEAT	0.	0.	0.	0.	0.	0.	525.
01700	OTHER GRAIN MILL PRODUCTS	0.	0.	0.	46.	4.	0.	378.
01800	BAKERY PRODUCTS	0.	0.	0.	50.	4.	0.	2511.
01900	SOFT DRINKS	0.	0.	0.	8.	0.	0.	984.
02000	OTHER FOOD PRODUCTS	0.	0.	0.	1192.	80.	0.	5845.
02100	ALCOHOLIC BEVERAGES	0.	0.	0.	371.	178.	0.	1994.
02200	TOBACCO	0.	0.	0.	61.	15.	0.	1761.
02300	TIRES & TUBES	0.	0.	0.	57.	3.	0.	751.
02400	OTHER RUBBER PRODUCTS	0.	0.	0.	294.	37.	0.	691.
02500	LEATHER PRODUCTS	0.	0.	0.	315.	46.	0.	1566.
02600	YARNS & MAN-MADE FIBRES	0.	0.	0.	447.	35.	0.	1173.
02700	FABRICS	0.	0.	0.	1224.	222.	0.	2102.
02800	TEXTILE PRODUCTS	0.	0.	0.	378.	53.	0.	1907.
02900	CLOTHING	0.	0.	0.	590.	118.	1.	6199.
03000	LUMBER & PLYWOOD	2421.	300.	2121.	409.	27.	1.	2907.
03100	WOOD PRODUCTS	0.	0.	0.	50.	3.	0.	701.
03200	FURNITURE & FIXTURES	0.	0.	0.	152.	27.	0.	1856.
03300	PULP&PAPER DUMMY & INTRA-TRANSFE	0.	0.	0.	0.	0.	0.	2766.
03400	PULP	0.	0.	0.	15.	0.	0.	177.
03500	NEWSPRINT	0.	0.	0.	1.	0.	0.	303.
03600	OTHER PAPER STOCK	0.	0.	0.	145.	18.	0.	1677.
03700	INDUSTRIAL PAPER PRODUCTS	0.	0.	0.	244.	26.	0.	2748.
03800	HOUSEHOLD PAPER PRODUCTS	0.	0.	0.	25.	3.	0.	414.
03900	PRINTED MATTER	0.	0.	0.	694.	26.	16.	4175.
04010	IRON & STEEL DUMMY & INTRA-TRANS	0.	0.	0.	0.	0.	0.	16720.
04020	IRON & STEEL PRODUCTS	16986.	5477.	11[illegible].	7013.	534.	0.	21068.
04100	ALUMINUM PRODUCTS	0.	0.	0.	268.	11.	0.	704.
04200	COPPER & COPPER ALLOY PRODUCTS	0.	0.	0.	66.	5.	0.	1523.
04300	NICKEL PRODUCTS	0.	0.	0.	57.	2.	0.	102.
04400	OTHER NON-FERROUS METAL PRODUCTS	0.	0.	0.	460.	6.	0.	618.
04500	METAL FABRICATED PRODUCTS	13388.	1141.	12248.	2438.	268.	6.	17347.
04600	AGRICULTURAL MACHINERY	0.	0.	0.	127.	0.	0.	37.
04700	OTHER INDUSTRIAL MACHINERY	6404.	3353.	3051.	4742.	387.	0.	4119.
04800	MOTOR VEHICLES	1857.	354.	15[illegible].	2222.	60.	0.	6048.
04900	MOTOR VEHICLE PARTS	0.	0.	0.	3307.	53.	0.	1916.

0000 INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0500 OTHER TRANSPORT EQUIPMENT	0.	0.	0.	172.	13.	0.	636.
0510 APPLIANCES	0.	0.	0.	707.	106.	0.	1852.
0520 OTHER ELECTRICAL EQUIPMENT	3494.	593.	2901.	1416.	210.	0.	4891.
0530 CEMENT & CONCRETE PRODUCTS	11327.	8.	11319.	63.	2.	0.	13790.
0540 OTHER NON-METALLIC MIN. PRODS.	0.	0.	0.	636.	45.	0.	1023.
0550 FUELS & PETROLEUM	0.	0.	0.	563.	25.	2.	4369.
0560 OTHER PETROLEUM & COAL PROD.	0.	0.	0.	279.	16.	0.	679.
0570 INDUSTRIAL CHEMICALS	0.	0.	0.	950.	50.	0.	1966.
0580 FERTILIZERS	0.	0.	0.	44.	0.	0.	187.
0590 PHARMACEUTICALS	0.	0.	0.	165.	18.	0.	762.
0600 OTHER CHEMICAL PRODUCTS	0.	0.	0.	597.	55.	0.	3073.
0610 SCIENTIFIC EQUIPMENT	0.	0.	0.	646.	47.	0.	320.
0620 PLASTIC PRODUCTS	0.	0.	0.	231.	21.	0.	688.
0630 OTHER MANUFACTURED PRODUCTS	0.	0.	0.	753.	101.	1.	1684.
0640 RESIDENTIAL DWELLINGS	0.	0.	0.	0.	0.	0.	0.
0650 NON-RESIDENTIAL BUILDINGS	0.	0.	0.	0.	0.	0.	0.
0660 ROADS, HIGHWAYS & AIRSTRIPS	0.	0.	0.	0.	0.	0.	0.
0670 GAS & OIL FACILITIES	0.	0.	0.	0.	0.	0.	0.
0680 DAMS & IRRIGATION PROJECTS	0.	0.	0.	0.	0.	0.	0.
0690 RR. TELEPHONE & TELEGRAPH INST.	0.	0.	0.	0.	0.	0.	0.
0700 OTHER ENGINEERING STRUCTURES	0.	0.	0.	0.	0.	0.	0.
0710 REPAIR CONSTRUCTION	0.	0.	0.	0.	0.	0.	5416.
0720 TRANSPORTATION SERVICES	0.	0.	0.	266.	0.	64.	14798.
0730 TRANSPORTATION MARGINS	1617.	0.	1617.	0.	0.	0.	7970.
0740 COMMUNICATION	0.	0.	0.	34.	0.	0.	5944.
0750 ELECTRIC POWER	0.	0.	0.	36.	0.	4.	4284.
0760 GAS & PIPELINE MARGINS	0.	0.	0.	0.	0.	0.	1575.
0770 OTHER UTILITIES	0.	0.	0.	0.	0.	661.	115.
0780 WHOLESALE TRADE	4109.	0.	4109.	0.	0.	0.	17436.
0790 RETAIL TRADE	0.	0.	0.	0.	0.	0.	22781.
0800 FINANCE, INS., & REAL ESTATE	0.	0.	0.	478.	0.	331.	24096.
0810 IMPUTED RENT	0.	0.	0.	0.	0.	0.	15275.
0820 PERSONAL SERVICES	0.	0.	0.	393.	0.	1107.	22242.
0830 BUSINESS SERVICES	7904.	295.	7599.	683.	0.	14.	11681.
0840 DUMMY	0.	0.	0.	0.	0.	0.	19330.
0850 NON-COMPETING IMPORTS	0.	0.	0.	1337.	47.	0.	0.
0860 BALANCE OF PAYMENTS ADJUSTMENT	0.	0.	0.	1052.	0.	0.	0.
0870 INCOME & EXPENDITURE ACC'T ADJ.	0.	0.	0.	0.	0.	0.	0.
0880 GOVERNMENT GOODS & SERVICES	0.	0.	0.	0.	0.	0.	0.
0890 INDIRECT COMMODITY TAXES	4104.	0.	4104.	0.	0.	0.	0.
0900 SUBSIDIES	0.	0.	0.	0.	0.	0.	0.
0910 OTHER INDIRECT TAXES	0.	0.	0.	0.	0.	0.	0.
0920 WAGES & SALARIES	86682.	0.	86682.	0.	0.	0.	170972.
0930 SUPPLEMENTARY LABOUR INCOME	0.	0.	0.	0.	0.	0.	4470.
0940 NET INCOME OF UNINCORP. BUSINESS	0.	0.	0.	0.	0.	0.	20223.
0951 HOUSEHOLD INVESTMENT INCOME	0.	0.	0.	0.	0.	0.	12553.
0952 DEPLETION & MINING WRITE-OFFS	0.	0.	0.	0.	0.	0.	0.
0953 CAPITAL COST ALLOWANCE	0.	0.	0.	0.	0.	0.	0.
0954 OTHER SURPLUS	0.	0.	0.	0.	0.	0.	0.
0960 TOTAL	160294.	11521.	148762.	44075.	3131.	2231.	567476.

SECTION A: IMPACT ANALYSIS OF EXPENSES ON SECONDARY TREATMENT,1966 I-O MODEL.

0000	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0010	GRAI	0.	0.	0.	78.	1.	0.	451.0
0020	OTHER AGRICULTURE	0.	0.	0.	807.	28.	15.	7805.4
0030	FOREST PRODUCTS	0.	0.	0.	20.	0.	0.	769.5
0040	FISHING & TRAPPING PRODUCTS	0.	0.	0.	63.	1.	0.	190.0
0050	CRUDE PETROLEUM	0.	0.	0.	954.	0.	0.	1152.9
0060	NATURAL GAS	0.	0.	0.	45.	3.	0.	134.2
0070	SULP OR	0.	0.	0.	6.	0.	0.	6.3
0080	COAL	0.	0.	0.	355.	10.	0.	142.9
0090	IRON ORE	0.	0.	0.	145.	0.	0.	47.8
0100	ASBESTOS	0.	0.	0.	1.	0.	0.	5.0
0110	OTHER MINERALS	0.	0.	0.	267.	1.	0.	1090.0
0120	MEAT PRODUCTS	0.	0.	0.	284.	12.	0.	6152.5
0130	DAIRY PRODUCTS	0.	0.	0.	69.	11.	0.	3190.1
0140	FISH PRODUCTS	0.	0.	0.	51.	6.	0.	348.2
0150	FEED	0.	0.	0.	8.	0.	0.	807.8
0160	FLOUR & WHEAT	0.	0.	0.	0.	0.	0.	346.1
0170	OTHER GRAIN MILL PRODUCTS	0.	0.	0.	30.	3.	0.	250.2
0180	BAKERY PRODUCTS	0.	0.	0.	33.	3.	0.	1652.5
0190	SOFT DRINKS	0.	0.	0.	5.	0.	0.	646.5
0200	OTHER FOOD PRODUCTS	0.	0.	0.	788.	53.	0.	3849.0
0210	ALCOHOLIC BEVERAGES	0.	0.	0.	245.	117.	0.	1311.8
0220	TOBACCO	0.	0.	0.	40.	10.	0.	1154.3
0230	TIRES & TUBES	0.	0.	0.	36.	6.	0.	472.1
0240	OTHER RUBBER PRODUCTS	0.	0.	0.	211.	26.	0.	499.1
0250	LEATHER PRODUCTS	0.	0.	0.	207.	30.	0.	1029.4
0260	YARNS & MAN-MADE FIBRES	0.	0.	0.	295.	23.	0.	775.6
0270	FABRICS	0.	0.	0.	819.	148.	0.	1398.4
0280	TEXTILE PRODUCTS	0.	0.	0.	246.	35.	0.	1237.3
0290	CLOTHING	0.	0.	0.	387.	77.	1.	4068.4
0300	LUMBER & PLYWOOD	451.	56.	395.	122.	7.	0.	872.6
0310	WOOD PRODUCTS	0.	0.	0.	34.	2.	0.	455.8
0320	FURNITURE & FIXTURES	0.	0.	0.	101.	18.	0.	1223.2
0330	PULP,PAPER DUMMY & INTRA-TRANSFE	0.	0.	0.	0.	0.	0.	1868.9
0340	PULP	0.	0.	0.	10.	0.	0.	121.5
0350	NEWSPRINT	0.	0.	0.	1.	0.	0.	210.1
0360	OTHER PAPER STOCK	0.	0.	0.	100.	12.	0.	1137.9
0370	INDUSTRIAL PAPER PRODUCTS	0.	0.	0.	170.	18.	0.	1852.5
0380	HOUSEHOLD PAPER PRODUCTS	0.	0.	0.	18.	2.	0.	273.8
0390	PRINTED MATTER	0.	0.	0.	466.	18.	11.	2905.1
0401	IRON & STEEL DUMMY & INTRA-TRANS	0.	0.	0.	0.	0.	0.	6648.2
0402	IRON & STEEL PRODUCTS	7082.	2329.	4753.	3060.	236.	0.	9574.8
0410	ALUMINUM PRODUCTS	0.	0.	0.	216.	9.	0.	557.6
0420	COPPER & COPPER ALLOY PRODUCTS	0.	0.	0.	72.	6.	0.	1982.0
0430	NICKEL PRODUCTS	0.	0.	0.	44.	2.	0.	74.0
0440	OTHER NON-FERROUS METAL PRODUCTS	0.	0.	0.	257.	3.	0.	367.1
0450	METAL FABRICATED PRODUCTS	1672.	213.	1459.	1168.	125.	4.	4861.4
0460	AGRICULTURAL MACHINERY	0.	0.	0.	86.	0.	0.	25.8
0470	OTHER INDUSTRIAL MACHINERY	8759.	1806.	6953.	2913.	330.	0.	7798.4
0480	MOTOR VEHICLES	0.	0.	0.	1218.	32.	0.	2963.3
0490	MOTOR VEHICLE PARTS	0.	0.	0.	1820.	29.	0.	1060.6

SECTION A: IMPACT ANALYSIS OF EXPENSES ON SECONDARY TREATMENT, 1966 I-O MODEL.

	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0350	OTHER TRANSPORT EQUIPMENT	0.	0.	[illegible]	128.	9.	0.	436.7
0351	APPLIANCES	0.	0.	[illegible]	494.	74.	0.	1287.1
0352	OTHER ELECTRICAL EQUIPMENT	6494.	1269.	5224.	1941.	289.	0.	6910.8
0353	CEMENT & CONCRETE PRODUCTS	3327.	3.	3324.	19.	1.	0.	4124.5
0354	OTHER NON-METALLIC MIN. PRODS.	0.	0.	[illegible]	377.	28.	0.	636.9
0355	FUELS, PETROLEUM	0.	0.	[illegible]	367.	17.	1.	2861.2
0356	OTHER PETROLEUM & COAL PROD.	0.	0.	[illegible]	168.	10.	0.	436.9
0357	INDUSTRIAL CHEMICALS	0.	0.	[illegible]	664.	34.	0.	1378.8
0358	FERTILIZERS	0.	0.	[illegible]	29.	0.	0.	125.4
0359	PHARMACEUTICALS	0.	0.	[illegible]	109.	12.	0.	500.8
0360	OTHER CHEMICAL PRODUCTS	0.	0.	[illegible]	394.	36.	0.	2000.0
0361	SCIENTIFIC EQUIPMENT	0.	0.	[illegible]	427.	31.	0.	214.6
0362	PLASTIC PRODUCTS	0.	0.	[illegible]	166.	16.	0.	485.7
0363	OTHER MANUFACTURED PRODUCTS	0.	0.	[illegible]	503.	67.	1.	1122.9
0364	RESIDENTIAL DWELLINGS	0.	0.	[illegible]	0.	0.	0.	0.0
0365	NON-RESIDENTIAL BUILDINGS	0.	0.	[illegible]	0.	0.	0.	0.0
0366	ROADS, HIGHWAYS & AIRSTRIPS	0.	0.	[illegible]	0.	0.	0.	0.0
0367	GAS & OIL FACILITIES	0.	0.	[illegible]	0.	0.	0.	0.0
0368	DAMS & IRRIGATION PROJECTS	0.	0.	[illegible]	0.	0.	0.	0.0
0369	RR., TELEPHONE & TELEGRAPH INST.	0.	0.	[illegible]	0.	0.	0.	0.0
0370	OTHER ENGINEERING STRUCTURES	0.	0.	[illegible]	0.	0.	0.	3760.3
0371	REPAIR CONSTRUCTION	0.	0.	[illegible]	161.	0.	41.	9125.4
0720	TRANSPORTATION SERVICES	0.	0.	[illegible]	0.	0.	0.	4540.6
0730	TRANSPORTATION MARGINS	702.	0.	702.	24.	0.	0.	4148.8
0740	COMMUNICATION	0.	0.	[illegible]	23.	0.	3.	2763.8
0750	ELECTRIC POWER	0.	0.	[illegible]	0.	0.	0.	1016.9
0760	GAS & PIPELINE MARGINS	0.	0.	[illegible]	0.	0.	432.	75.3
0770	OTHER UTILITIES	0.	0.	[illegible]	0.	0.	0.	10960.0
0780	WHOLESALE TRADE	2349.	0.	2349.	0.	0.	0.	14900.8
0790	RETAIL TRADE	0.	0.	[illegible]	323.	0.	231.	16255.4
0800	FINANCE, INS., & REAL ESTATE	0.	0.	[illegible]	0.	0.	0.	10012.1
0810	IMPUTED RENT	0.	0.	[illegible]	274.	0.	728.	14662.2
0820	PERSONAL SERVICES	0.	0.	[illegible]	950.	0.	27.	20432.2
0830	BUSINESS SERVICES	18357.	685.	17648.	0.	0.	0.	13006.2
0840	DUMMY	0.	0.	[illegible]	884.	31.	0.	0.0
0850	NON-COMPETING IMPORTS	0.	0.	[illegible]	708.	0.	0.	0.0
0860	BALANCE OF PAYMENTS ADJUSTMENT	0.	0.	[illegible]	0.	0.	0.	0.0
0870	INCOME & EXPENDITURE ACC'T ADJ.	0.	0.	[illegible]	0.	0.	0.	0.0
0880	GOVERNMENT GOODS & SERVICES	0.	0.	[illegible]	0.	0.	0.	0.0
0890	INDIRECT COMMODITY TAXES	1898.	0.	1898.	0.	0.	0.	0.0
0900	SUBSIDIES	0.	0.	[illegible]	0.	0.	0.	0.0
0910	OTHER INDIRECT TAXES	0.	0.	[illegible]	0.	0.	0.	0.0
0920	WAGES & SALARIES	52934.	0.	52934.	0.	0.	0.	110506.6
0930	SUPPLEMENTARY LABOUR INCOME	0.	0.	[illegible]	0.	0.	0.	3014.1
0940	NET INCOME OF UNINCORP. BUSINESS	0.	0.	[illegible]	0.	0.	0.	14270.6
0951	HOUSEHOLD INVESTMENT INCOME	0.	0.	[illegible]	0.	0.	0.	8690.8
0952	DEPLETION & MINING WRITE-OFFS	0.	0.	[illegible]	0.	0.	0.	0.0
0953	CAPITAL COST ALLOWANCE	0.	0.	[illegible]	0.	0.	0.	0.0
0954	OTHER SURPLUS	0.	0.	[illegible]	0.	0.	0.	0.0
0960	TOTAL	104024.	6360.	97659.	27501.	2111.	1496.	372483.4

SECTION A: IMPACT ANALYSIS OF EXPENSES ON RECOVERY — 1966 I-O MODEL

0000	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0010	ORAL	0.	0.	[illegible]	130.	5.	0.	757.3
0020	OTHER AGRICULTURE	0.	0.	[illegible]	1358.	48.	25.	12596.4
0030	FOREST PRODUCTS	0.	0.	[illegible]	181.	0.	0.	3810.3
0040	FISHING & TRAPPING PRODUCTS	0.	0.	[illegible]	105.	1.	0.	315.9
0050	CRUDE PETROLEUM	0.	0.	[illegible]	1951.	0.	0.	2356.5
0060	NATURAL GAS	0.	0.	[illegible]	90.	6.	0.	267.2
0070	SULP OR	0.	0.	[illegible]	15.	0.	0.	15.8
0080	COAL	0.	0.	[illegible]	1244.	33.	0.	501.8
0090	IRON ORE	0.	0.	[illegible]	688.	0.	0.	226.7
0100	ASBESTOS	0.	0.	[illegible]	4.	0.	0.	13.6
0110	OTHER MINERALS	0.	0.	[illegible]	1564.	80.	1.	10517.8
0120	MEAT PRODUCTS	0.	0.	[illegible]	471.	21.	0.	10112.8
0130	DAIRY PRODUCTS	0.	0.	[illegible]	114.	18.	0.	5264.7
0140	FISH PRODUCTS	0.	0.	[illegible]	86.	9.	0.	579.2
0150	FEED	0.	0.	[illegible]	14.	1.	0.	1326.7
0160	FLOUR & WHEAT	0.	0.	[illegible]	0.	0.	0.	575.0
0170	OTHER GRAIN MILL PRODUCTS	0.	0.	[illegible]	51.	4.	0.	414.0
0180	BAKERY PRODUCTS	0.	0.	[illegible]	54.	4.	0.	2722.7
0190	SOFT DRINKS	0.	0.	[illegible]	8.	1.	0.	1064.5
0200	OTHER FOOD PRODUCTS	0.	0.	[illegible]	1321.	89.	0.	6368.9
0210	ALCOHOLIC BEVERAGES	0.	0.	[illegible]	412.	198.	0.	2185.8
0220	TOBACCO	0.	0.	[illegible]	66.	16.	0.	1895.1
0230	TIRES & TUBES	0.	0.	[illegible]	98.	16.	0.	1239.4
0240	OTHER RUBBER PRODUCTS	0.	0.	[illegible]	864.	101.	0.	1892.5
0250	LEATHER PRODUCTS	0.	0.	[illegible]	350.	51.	0.	1745.4
0260	YARNS & MAN-MADE FIBRES	0.	0.	[illegible]	516.	40.	0.	1350.3
0270	FABRICS	0.	0.	[illegible]	1476.	264.	0.	2506.0
0280	TEXTILE PRODUCTS	0.	0.	[illegible]	420.	59.	0.	2158.1
02900	CLOTHING	0.	0.	[illegible]	637.	127.	1.	6714.0
03000	LUMBER & PLYWOOD	0.	0.	[illegible]	571.	111.	2.	4332.4
03100	WOOD PRODUCTS	0.	0.	[illegible]	120.	11.	0.	3911.3
03200	FURNITURE & FIXTURES	0.	0.	[illegible]	159.	28.	0.	1962.9
03300	PULP&PAPER DUMMY & INTRA-TRANSFE	0.	0.	[illegible]	0.	0.	0.	3640.1
03400	PULP	0.	0.	[illegible]	21.	0.	0.	239.1
03500	NEWSPRINT	0.	0.	[illegible]	2.	0.	0.	389.8
03600	OTHER PAPER STOCK	0.	0.	[illegible]	193.	24.	0.	2235.1
03700	INDUSTRIAL PAPER PRODUCTS	0.	0.	[illegible]	340.	37.	0.	3805.7
03800	HOUSEHOLD PAPER PRODUCTS	0.	0.	[illegible]	28.	3.	0.	481.8
03900	PRINTED MATTER	0.	0.	[illegible]	798.	33.	18.	5374.1
04010	IRON & STEEL DUMMY & INTRA-TRANS	0.	0.	[illegible]	0.	0.	0.	324116.8
04020	IRON & STEEL PRODUCTS	0.	0.	[illegible]	7261.	526.	0.	27351.7
04100	ALUMINUM PRODUCTS	0.	0.	[illegible]	587.	24.	0.	1552.7
04200	COPPER & COPPER ALLOY PRODUCTS	0.	0.	[illegible]	135.	11.	0.	3791.0
04300	NICKEL PRODUCTS	0.	0.	[illegible]	104.	3.	0.	194.4
04400	OTHER NON-FERROUS METAL PRODUCTS	0.	0.	[illegible]	872.	10.	0.	1134.2
04500	METAL FABRICATED PRODUCTS	0.	0.	[illegible]	3919.	483.	9.	34752.4
04600	AGRICULTURAL MACHINERY	0.	0.	[illegible]	140.	0.	0.	39.4
04700	OTHER INDUSTRIAL MACHINERY	0.	0.	[illegible]	5460.	472.	0.	7084.8
04800	MOTOR VEHICLES	0.	0.	[illegible]	2001.	53.	0.	4868.6
04900	MOTOR VEHICLE PARTS	0.	0.	[illegible]	3671.	60.	0.	2198.4

SECTION A: IMPACT ANALYSIS OF EXPENSES ON RECOVERY 1966 I-O MODEL.

0000	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0500	OTHER TRANSPORT EQUIPMENT	0.	0.	0.	225.	17.	0.	815.8
0510	APPLIANCES	0.	0.	0.	755.	113.	0.	1975.5
0520	OTHER ELECTRICAL EQUIPMENT	0.	0.	0.	1114.	156.	0.	5823.1
0530	CEMENT & CONCRETE PRODUCTS	0.	0.	0.	136.	6.	0.	27007.7
0540	OTHER NON-METALLIC MIN. PRODS.	0.	0.	0.	1073.	75.	0.	2007.5
0550	FUELS PETROLEUM	0.	0.	0.	730.	33.	0.	5648.2
0560	OTHER PETROLEUM & COAL PROD.	0.	0.	0.	812.	26.	0.	1574.9
0570	INDUSTRIAL CHEMICALS	0.	0.	0.	1801.	94.	0.	3600.8
0580	FERTILIZERS	0.	0.	0.	50.	0.	0.	214.2
0590	PHARMACEUTICALS	0.	0.	0.	185.	20.	0.	855.0
0600	OTHER CHEMICAL PRODUCTS	0.	0.	0.	870.	86.	0.	5046.4
0610	SCIENTIFIC EQUIPMENT	0.	0.	0.	890.	66.	0.	468.3
0620	PLASTIC PRODUCTS	0.	0.	0.	761.	80.	0.	2808.8
0630	OTHER MANUFACTURED PRODUCTS	0.	0.	0.	949.	126.	1.	2664.5
0640	RESIDENTIAL DWELLINGS	0.	0.	0.	0.	0.	0.	0.0
0650	NON-RESIDENTIAL BUILDINGS	0.	0.	0.	0.	0.	0.	0.0
0660	ROADS, HIGHWAYS & AIRSTRIPS	0.	0.	0.	0.	0.	0.	0.0
0670	GAS & OIL FACILITIES	0.	0.	0.	0.	0.	0.	0.0
0680	DAMS & IRRIGATION PROJECTS	0.	0.	0.	0.	0.	0.	0.0
0690	RR. TELEPHONE & TELEGRAPH INST.	0.	0.	0.	0.	0.	0.	214000.0
0700	OTHER ENGINEERING STRUCTURES	214000.	0.	214000.	0.	0.	0.	6647.6
0710	REPAIR CONSTRUCTION	0.	0.	0.	784.	0.	96.	23261.7
0720	TRANSPORTATION SERVICES	0.	0.	0.	0.	0.	0.	13070.5
0730	TRANSPORTATION MARGINS	0.	0.	0.	43.	0.	0.	7517.0
0740	COMMUNICATION	0.	0.	0.	46.	0.	6.	5491.1
0750	ELECTRIC POWER	0.	0.	0.	0.	0.	0.	1955.8
0760	GAS & PIPELINE MARGINS	0.	0.	0.	0.	0.	742.	129.5
0770	OTHER UTILITIES	0.	0.	0.	0.	0.	0.	25549.8
0780	WHOLESALE TRADE	0.	0.	0.	625.	0.	438.	27097.1
0790	RETAIL TRADE	0.	0.	0.	0.	0.	0.	29915.8
0800	FINANCE, INS., & REAL ESTATE	0.	0.	0.	729.	0.	1197.	16429.9
0810	IMPUTED RENT	0.	0.	0.	1304.	0.	13.	28440.7
0820	PERSONAL SERVICES	0.	0.	0.	0.	0.	0.	13705.9
0830	BUSINESS SERVICES	0.	0.	0.	1559.	52.	0.	31263.0
0840	DUMMY	0.	0.	0.	1807.	0.	0.	0.0
0850	NON-COMPETING IMPORTS	0.	0.	0.	0.	0.	0.	0.0
0860	BALANCE OF PAYMENTS ADJUSTMENT	0.	0.	0.	0.	0.	0.	0.0
0870	INCOME & EXPENDITURE ACC'T ADJ.	0.	0.	0.	0.	0.	0.	0.0
0880	GOVERNMENT GOODS & SERVICES	0.	0.	0.	0.	0.	0.	0.0
0890	INDIRECT COMMODITY TAXES	0.	0.	0.	0.	0.	0.	0.0
0900	SUBSIDIES	0.	0.	0.	0.	0.	0.	0.0
0910	OTHER INDIRECT TAXES	0.	0.	0.	0.	0.	0.	168918.4
0920	WAGES & SALARIES	0.	0.	0.	0.	0.	0.	9225.0
0930	SUPPLEMENTARY LABOUR INCOME	0.	0.	0.	0.	0.	0.	85591.6
0940	NET INCOME OF UNINCORP. BUSINESS	0.	0.	0.	0.	0.	0.	20231.5
0951	HOUSEHOLD INVESTMENT INCOME	0.	0.	0.	0.	0.	0.	0.0
0952	DEPLETION & MINING WRITE-OFFS	0.	0.	0.	0.	0.	0.	0.0
0953	CAPITAL COST ALLOWANCE	0.	0.	0.	0.	0.	0.	0.0
0954	OTHER SURPLUS	0.	0.	0.	0.	0.	0.	0.0
0960	TOTAL	214000.	0.	214000.	57919.	3861.	2552.	952204.2

SECTION A: IMPACT ANALYSIS OF EXPENSES ON TOTAL 1966 I-O MODEL.

0000	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0010	GRAI	0.	0.	0.	325.	14.	1.	1884.5
0020	OTHER AGRICULTURE	0.	0.	0.	3379.	118.	61.	31879.0
0030	FOREST PRODUCTS	0.	0.	0.	253.	0.	0.	6232.9
0040	FISHING & TRAPPING PRODUCTS	0.	0.	0.	264.	3.	1.	789.3
0050	CRUDE PETROLEUM	0.	0.	0.	4362.	0.	0.	5269.5
0060	NATURAL GAS	0.	0.	0.	206.	14.	0.	612.9
0070	SULP OR	0.	0.	0.	31.	0.	0.	31.5
0080	COAL	0.	0.	0.	2249.	60.	0.	907.2
0090	IRON ORE	0.	0.	0.	1188.	0.	0.	391.4
0100	ASBESTOS	0.	0.	0.	8.	0.	0.	26.5
0110	OTHER MINERALS	0.	0.	0.	2288.	12.	1.	13368.5
0120	MEAT PRODUCTS	0.	0.	0.	1185.	52.	0.	25561.2
0130	DAIRY PRODUCTS	0.	0.	0.	289.	46.	0.	13300.9
0140	FISH PRODUCTS	0.	0.	0.	214.	23.	0.	1450.7
0150	FEED	0.	0.	0.	35.	2.	0.	3329.4
0160	FLOUR & WHEAT	0.	0.	0.	0.	0.	0.	1446.5
0170	OTHER GRAIN MILL PRODUCTS	0.	0.	0.	127.	11.	0.	10423.3
0180	BAKERY PRODUCTS	0.	0.	0.	136.	11.	0.	6886.3
0190	SOFT DRINKS	0.	0.	0.	21.	1.	0.	2695.3
0200	OTHER FOOD PRODUCTS	0.	0.	0.	3301.	221.	0.	16062.6
0210	ALCOHOLIC BEVERAGES	0.	0.	0.	1029.	493.	0.	5492.0
0220	TOBACCO	0.	0.	0.	167.	41.	0.	4810.5
0230	TIRES & TUBES	0.	0.	0.	192.	32.	0.	2462.1
0240	OTHER RUBBER PRODUCTS	0.	0.	0.	1368.	165.	0.	3082.6
0250	LEATHER PRODUCTS	0.	0.	0.	871.	128.	0.	4340.8
0260	YARNS & MAN-MADE FIBRES	0.	0.	0.	1258.	99.	0.	3298.5
0270	FABRICS	0.	0.	0.	3519.	635.	0.	6006.6
0280	TEXTILE PRODUCTS	0.	0.	0.	1044.	148.	0.	5302.5
0290	CLOTHING	0.	0.	0.	1615.	321.	3.	16981.6
0300	LUMBER & PLYWOOD	2872.	356.	2516.	1102.	45.	2.	8112.2
0310	WOOD PRODUCTS	0.	0.	0.	204.	15.	0.	5068.2
0320	FURNITURE & FIATURES	0.	0.	0.	412.	72.	0.	5042.3
0330	PULPSPAPER DUMMY & INTRA-TRANSFE	0.	0.	0.	0.	0.	0.	8274.8
0340	PULP	0.	0.	0.	46.	0.	0.	537.4
0350	NEWSPRINT	0.	0.	0.	4.	0.	0.	902.4
0360	OTHER PAPER STOCK	0.	0.	0.	437.	55.	0.	5050.5
0370	INDUSTRIAL PAPER PRODUCTS	0.	0.	0.	754.	81.	0.	8406.0
0380	HOUSEHOLD PAPER PRODUCTS	0.	0.	0.	89.	7.	0.	1170.0
0390	PRINTED MATTER	0.	0.	0.	1958.	77.	45.	12453.9
0401	IRON & STEEL DUMMY & INTRA-TRANS	0.	0.	0.	0.	0.	0.	55785.0
0402	IRON & STEEL PRODUCTS	24068.	7806.	16263.	17334.	1296.	0.	57994.5
0410	ALUMINUM PRODUCTS	0.	0.	0.	1071.	45.	0.	2814.1
0420	COPPER & COPPER ALLOY PRODUCTS	0.	0.	0.	274.	22.	0.	7296.0
0430	NICKEL PRODUCTS	0.	0.	0.	205.	7.	0.	370.3
0440	OTHER NON-FERROUS METAL PRODUCTS	0.	0.	0.	1588.	19.	0.	2119.7
0450	METAL FABRICATED PRODUCTS	15060.	1353.	13707.	7525.	876.	19.	56960.5
0460	AGRICULTURAL MACHINERY	0.	0.	0.	354.	0.	0.	105.1
0470	OTHER INDUSTRIAL MACHINERY	15164.	5159.	10004.	13115.	1189.	0.	19002.7
0480	MOTOR VEHICLES	1857.	354.	1503.	5441.	146.	0.	13879.9
0490	MOTOR VEHICLE PARTS	0.	0.	0.	8798.	143.	0.	5175.2

SECTION A: IMPACT ANALYSIS OF EXPENSES ON TOTAL 1966 I-O MODEL.

0000	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0500	OTHER TRANSPORT EQUIPMENT	0.	0.	0.	525.	39.	0.	1888.5
0510	APPLIANCES	0.	0.	0.	1957.	692.	0.	5114.7
0520	OTHER ELECTRICAL EQUIPMENT	9988.	1663.	8125.	4471.	656.	0.	17625.0
0530	CEMENT & CONCRETE PRODUCTS	14654.	11.	14643.	218.	3.	0.	44922.2
0540	OTHER NON-METALLIC MIN. PRODS.	0.	0.	0.	2085.	147.	0.	3667.8
0550	FUEL & PETROLEUM	0.	0.	0.	1659.	75.	6.	12878.5
0560	OTHER PETROLEUM & COAL PROD.	0.	0.	0.	1260.	52.	0.	2690.5
0570	INDUSTRIAL CHEMICALS	0.	0.	0.	3416.	178.	0.	6946.0
0580	FERTILIZERS	0.	0.	0.	123.	1.	0.	526.8
0590	PHARMACEUTICALS	0.	0.	0.	459.	45.	0.	2117.7
0600	OTHER CHEMICAL PRODUCTS	0.	0.	0.	1862.	177.	0.	10119.8
0610	SCIENTIFIC EQUIPMENT	0.	0.	0.	1963.	144.	0.	1003.3
0620	PLASTIC PRODUCTS	0.	0.	0.	1158.	117.	0.	3982.3
0630	OTHER MANUFACTURED PRODUCTS	0.	0.	0.	2205.	294.	2.	5471.6
0640	RESIDENTIAL DWELLINGS	0.	0.	0.	0.	0.	0.	0.0
0650	NON-RESIDENTIAL BUILDINGS	0.	0.	0.	0.	0.	0.	0.0
0660	ROADS, HIGHWAYS & AIRSTRIPS	0.	0.	0.	0.	0.	0.	0.0
0670	GAS & OIL FACILITIES	0.	0.	0.	0.	0.	0.	0.0
0680	DAMS & IRRIGATION PROJECTS	0.	0.	0.	0.	0.	0.	0.0
0690	RR., TELEPHONE & TELEGRAPH INST.	0.	0.	0.	0.	0.	0.	0.0
0700	OTHER ENGINEERING STRUCTURES	214000.	0.	214000.	0.	0.	0.	214000.0
0710	REPAIR CONSTRUCTION	0.	0.	0.	0.	0.	0.	15824.3
0720	TRANSPORTATION SERVICES	0.	0.	0.	1211.	0.	201.	47185.6
0730	TRANSPORTATION MARGINS	2319.	0.	2319.	0.	0.	0.	25581.2
0740	COMMUNICATION	0.	0.	0.	101.	1.	0.	17609.8
0750	ELECTRIC POWER	0.	0.	0.	104.	0.	13.	12539.2
0760	GAS & PIPELINE MARGINS	0.	0.	0.	0.	0.	0.	4547.9
0770	OTHER UTILITIES	0.	0.	0.	0.	0.	1835.	320.1
0780	WHOLESALE TRADE	6458.	0.	6458.	0.	0.	0.	53945.8
0790	RETAIL TRADE	0.	0.	0.	0.	0.	1.	94778.7
0800	FINANCE, INS., & REAL ESTATE	0.	0.	0.	1425.	0.	1000.	70267.5
0810	IMPUTED RENT	0.	0.	0.	0.	0.	0.	41716.5
0820	PERSONAL SERVICES	0.	0.	0.	1396.	0.	3031.	65344.9
0830	BUSINESS SERVICES	26261.	980.	25247.	2937.	0.	54.	45818.7
0840	DUMMY	0.	0.	0.	1.	0.	0.	63598.7
0850	NON-COMPETING IMPORTS	0.	0.	0.	3780.	130.	0.	0.0
0860	BALANCE OF PAYMENTS ADJUSTMENT	0.	0.	0.	3568.	0.	0.	0.0
0870	INCOME & EXPENDITURE ACC'T ADJ.	0.	0.	0.	0.	0.	0.	0.0
0880	GOVERNMENT GOODS & SERVICES	0.	0.	0.	0.	0.	0.	0.0
0890	INDIRECT COMMODITY TAXES	6002.	0.	6002.	0.	0.	0.	0.0
0900	SUBSIDIES	0.	0.	0.	0.	0.	0.	0.0
0910	OTHER INDIRECT TAXES	0.	0.	0.	0.	0.	0.	0.0
0920	WAGES & SALARIES	139616.	0.	139616.	0.	0.	0.	450396.3
0930	SUPPLEMENTARY LABOUR INCOME	0.	0.	0.	0.	0.	0.	16709.1
0940	NET INCOME OF UNINCORP. BUSINESS	0.	0.	0.	0.	0.	0.	60085.6
0951	HOUSEHOLD INVESTMENT INCOME	0.	0.	0.	0.	0.	0.	41475.3
0952	DEPLETION & MINING WRITE-OFFS	0.	0.	0.	0.	0.	0.	0.0
0953	CAPITAL COST ALLOWANCE	0.	0.	0.	0.	0.	0.	0.0
0954	OTHER SURPLUS	0.	0.	0.	0.	0.	0.	0.0
0960	TOTAL	478318.	17881.	460437.	129495.	9103.	6279.	1892163.0

SECTION A: IMPACT ANALYSIS OF EXPENSES ON STRUCTURAL 1966 I-O MODEL.

	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0110	WHEAT	0.	0.	0.	32.	1.	0.	186.9
0120	OTHER AGRICULTURE	0.	0.	0.	325.	12.	0.	3141.3
0130	FOREST PRODUCTS	0.	0.	0.	43.	0.	0.	1089.8
0140	FISHING & TRAPPING PRODUCTS	0.	0.	0.	26.	0.	0.	77.8
0150	CRUDE PETROLEUM	0.	0.	0.	426.	0.	0.	515.0
0160	NATURAL GAS	0.	0.	0.	21.	1.	0.	61.5
0170	SULPHUR	0.	0.	0.	3.	0.	0.	2.7
0180	COAL	0.	0.	0.	203.	5.	0.	82.2
0190	IRON ORE	0.	0.	0.	49.	0.	0.	16.2
0200	ASBESTOS	0.	0.	0.	1.	0.	0.	1.8
0210	OTHER MINERALS	0.	0.	0.	182.	5.	0.	807.3
0220	MEAT PRODUCTS	0.	0.	0.	119.	5.	0.	2566.0
0230	DAIRY PRODUCTS	0.	0.	0.	29.	2.	0.	1340.8
0240	FISH PRODUCTS	0.	0.	0.	21.	0.	0.	144.2
0250	FEED	0.	0.	0.	3.	0.	0.	330.3
0260	FLOUR & WHEAT	0.	0.	0.	0.	0.	0.	145.4
0270	OTHER GRAIN MILL PRODUCTS	0.	0.	0.	13.	1.	0.	104.6
0280	BAKERY PRODUCTS	0.	0.	0.	14.	1.	0.	694.7
0290	SOFT DRINKS	0.	0.	0.	2.	0.	0.	272.5
0300	OTHER FOOD PRODUCTS	0.	0.	0.	331.	22.	0.	1617.7
0310	ALCOHOLIC BEVERAGES	0.	0.	0.	102.	46.	0.	550.8
0320	TOBACCO	0.	0.	0.	17.	4.	0.	487.2
0330	TIRES & TUBES	0.	0.	0.	16.	3.	0.	217.0
0340	OTHER RUBBER PRODUCTS	0.	0.	0.	73.	9.	0.	173.9
0350	LEATHER PRODUCTS	0.	0.	0.	87.	13.	0.	433.0
0360	YARNS & MAN-MADE FIBRES	0.	0.	0.	123.	10.	0.	322.6
0370	FABRICS	0.	0.	0.	335.	61.	0.	576.3
0380	TEXTILE PRODUCTS	0.	0.	0.	103.	15.	0.	521.9
0390	CLOTHING	0.	0.	0.	163.	33.	0.	1715.8
0400	LUMBER & PLYWOOD	2872.	356.	2516.	400.	28.	0.	2834.6
0410	WOOD PRODUCTS	0.	0.	0.	14.	1.	0.	224.5
0420	FURNITURE & FIXTURES	0.	0.	0.	41.	7.	0.	501.3
0430	PULP,PAPER DUMMY & INTRA-TRANSFE	0.	0.	0.	0.	0.	0.	755.9
0440	PULP	0.	0.	0.	4.	0.	0.	48.2
0450	NEWSPRINT	0.	0.	0.	0.	0.	0.	82.4
0460	OTHER PAPER STOCK	0.	0.	0.	39.	5.	0.	451.1
0470	INDUSTRIAL PAPER PRODUCTS	0.	0.	0.	68.	7.	0.	781.7
0480	HOUSEHOLD PAPER PRODUCTS	0.	0.	0.	7.	1.	0.	115.8
0490	PRINTED MATTER	0.	0.	0.	191.	7.	4.	1135.6
0401	IRON & STEEL DUMMY & INTRA-TRANS	0.	0.	0.	0.	0.	0.	2267.3
0402	IRON & STEEL PRODUCTS	0.	0.	0.	402.	24.	0.	1616.9
0410	ALUMINUM PRODUCTS	0.	0.	0.	64.	3.	0.	166.6
0420	COPPER & COPPER ALLOY PRODUCTS	0.	0.	0.	16.	1.	0.	344.9
0430	NICKEL PRODUCTS	0.	0.	0.	13.	1.	0.	20.8
0440	OTHER NON-FERROUS METAL PRODUCTS	0.	0.	0.	89.	1.	0.	125.8
0450	METAL FABRICATED PRODUCTS	6002.	512.	5490.	833.	85.	1.	6784.1
0460	AGRICULTURAL MACHINERY	0.	0.	0.	32.	0.	0.	8.6
0470	OTHER INDUSTRIAL MACHINERY	0.	0.	0.	385.	30.	0.	296.9
0480	MOTOR VEHICLES	0.	0.	0.	514.	14.	0.	1250.7
0490	MOTOR VEHICLE PARTS	0.	0.	0.	797.	13.	0.	465.7

	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0300	OTHER TRANSPORT EQUIPMENT	0.	0.	0.	45.	4.	0.	179.5
0310	APPLIANCES	0.	0.	0.	190.	28.	0.	498.7
0320	OTHER ELECTRICAL EQUIPMENT	0.	0.	0.	203.	28.	0.	474.6
0330	CEMENT & CONCRETE PRODUCTS	7429.	0.	7429.	49.	1.	0.	9531.7
0340	OTHER NON-METALLIC MIN. PRODS.	0.	0.	0.	139.	10.	0.	241.3
0350	FUEL & PETROLEUM	0.	0.	0.	164.	7.	1.	1283.4
0360	OTHER PETROLEUM & COAL PROD.	0.	0.	0.	72.	5.	0.	189.4
0370	INDUSTRIAL CHEMICALS	0.	0.	0.	265.	14.	0.	553.7
0380	FERTILIZERS	0.	0.	0.	12.	0.	0.	50.7
0390	PHARMACEUTICALS	0.	0.	0.	46.	3.	0.	215.1
0400	OTHER CHEMICAL PRODUCTS	0.	0.	0.	169.	15.	0.	902.5
0410	SCIENTIFIC EQUIPMENT	0.	0.	0.	185.	13.	0.	87.5
0420	PLASTIC PRODUCTS	0.	0.	0.	64.	6.	0.	191.4
0430	OTHER MANUFACTURED PRODUCTS	0.	0.	0.	208.	28.	0.	475.7
0440	RESIDENTIAL DWELLINGS	0.	0.	0.	0.	0.	0.	0.0
0450	NON-RESIDENTIAL BUILDINGS	0.	0.	0.	0.	0.	0.	0.0
0460	ROADS, HIGHWAYS & AIRSTRIPS	0.	0.	0.	0.	0.	0.	0.0
0470	GAS & OIL FACILITIES	0.	0.	0.	0.	0.	0.	0.0
0480	DAMS & IRRIGATION PROJECTS	0.	0.	0.	0.	0.	0.	0.0
0490	RR., TELEPHONE & TELEGRAPH INST.	0.	0.	0.	0.	0.	0.	0.0
0500	OTHER ENGINEERING STRUCTURES	0.	0.	0.	0.	0.	0.	0.0
0510	REPAIR CONSTRUCTION	0.	0.	0.	0.	0.	0.	1528.2
0520	TRANSPORTATION SERVICES	0.	0.	0.	88.	0.	19.	4687.0
0530	TRANSPORTATION MARGINS	818.	0.	818.	0.	0.	0.	2755.9
0540	COMMUNICATION	0.	0.	0.	9.	0.	0.	1624.3
0550	ELECTRIC POWER	0.	0.	0.	10.	0.	1.	1223.1
0560	GAS - PIPELINE MARGINS	0.	0.	0.	0.	0.	0.	453.4
0570	OTHER UTILITIES	0.	0.	0.	0.	0.	185.	32.2
0580	WHOLESALE TRADE	1069.	0.	1069.	0.	0.	0.	4984.1
0590	RETAIL TRADE	0.	0.	0.	0.	0.	0.	6414.4
0600	FINANCE, INS., & REAL ESTATE	0.	0.	0.	134.	0.	92.	8763.1
0610	IMPUTED RENT	0.	0.	0.	0.	0.	0.	4225.9
0620	PERSONAL SERVICES	0.	0.	0.	106.	0.	306.	6265.2
0630	BUSINESS SERVICES	0.	0.	0.	110.	0.	1.	1224.5
0840	DUMMY	0.	0.	0.	0.	0.	0.	5826.0
0650	NON-COMPETING IMPORTS	0.	0.	0.	369.	13.	0.	0.0
0660	BALANCE OF PAYMENTS ADJUSTMENT	0.	0.	0.	314.	0.	0.	0.0
0670	INCOME & EXPENDITURE ACC'T ADJ.	0.	0.	0.	0.	0.	0.	0.0
0880	GOVERNMENT GOODS & SERVICES	0.	0.	0.	0.	0.	0.	0.0
0890	INDIRECT COMMODITY TAXES	1061.	0.	1061.	0.	0.	0.	0.0
0900	SUBSIDIES	0.	0.	0.	0.	0.	0.	0.0
0910	OTHER INDIRECT TAXES	0.	0.	0.	0.	0.	0.	0.0
0920	WAGES & SALARIES	23399.	0.	23399.	0.	0.	0.	47243.4
0930	SUPPLEMENTARY LABOUR INCOME	0.	0.	0.	0.	0.	0.	1274.0
0940	NET INCOME OF UNINCORP. BUSINESS	0.	0.	0.	0.	0.	0.	5515.9
0951	HOUSEHOLD INVESTMENT INCOME	0.	0.	0.	0.	0.	0.	3572.1
0952	DEPLETION & MINING WRITE-OFFS	0.	0.	0.	0.	0.	0.	0.0
0953	CAPITAL COST ALLOWANCE	0.	0.	0.	0.	0.	0.	0.0
0954	OTHER SURPLUS	0.	0.	0.	0.	0.	0.	0.0
0960	TOTAL	42649.	868.	41781.	9738.	658.	618.	158961.5

SECTION A: IMPACT ANALYSIS OF EXPENSES ON ARCHITECTURAL 1966 I-O MODEL.

0000 INPUT-OUTPUT COMMOD. AGGN.SM	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0010 GRAT	0.	0.	0.	0.	0.	0.	37.1
0020 OTHER AGRICULTURE	0.	0.	0.	66.	2.	1.	622.5
0030 FOREST PRODUCTS	0.	0.	0.	1.	0.	0.	60.2
0040 FISHING & TRAPPING PRODUCTS	0.	0.	0.	5.	0.	0.	15.8
0050 CRUDE PETROLEUM	0.	0.	0.	91.	0.	0.	110.5
0060 NATURAL GAS	0.	0.	0.	5.	0.	0.	13.8
0070 SULPHUR	0.	0.	0.	1.	0.	0.	0.6
0080 COAL	0.	0.	0.	45.	1.	0.	18.1
0090 IRON ORE	0.	0.	0.	15.	0.	0.	5.0
0100 ASBESTOS	0.	0.	0.	0.	0.	0.	0.4
0110 OTHER MINERALS	0.	0.	0.	74.	0.	0.	196.4
0120 MEAT PRODUCTS	0.	0.	0.	24.	1.	0.	508.4
0130 DAIRY PRODUCTS	0.	0.	0.	6.	1.	0.	264.3
0140 FISH PRODUCTS	0.	0.	0.	4.	0.	0.	29.2
0150 FEED	0.	0.	0.	1.	0.	0.	64.8
0160 FLOUR & WHEAT	0.	0.	0.	0.	0.	0.	28.8
0170 OTHER GRAIN MILL PRODUCTS	0.	0.	0.	3.	0.	0.	20.6
0180 BAKERY PRODUCTS	0.	0.	0.	3.	0.	0.	137.0
0190 SOFT DRINKS	0.	0.	0.	0.	0.	0.	53.8
0200 OTHER FOOD PRODUCTS	0.	0.	0.	65.	4.	0.	318.8
0210 ALCOHOLIC BEVERAGES	0.	0.	0.	21.	10.	0.	110.7
0220 TOBACCO	0.	0.	0.	3.	1.	0.	95.7
0230 TIRES & TUBES	0.	0.	0.	3.	1.	0.	44.7
0240 OTHER RUBBER PRODUCTS	0.	0.	0.	20.	2.	0.	45.9
0250 LEATHER PRODUCTS	0.	0.	0.	17.	3.	0.	85.2
0260 YARNS & MAN-MADE FIBRES	0.	0.	0.	25.	2.	0.	64.2
0270 FABRICS	0.	0.	0.	67.	12.	0.	114.8
0280 TEXTILE PRODUCTS	0.	0.	0.	21.	3.	0.	103.9
0290 CLOTHING	0.	0.	0.	32.	6.	0.	336.7
0300 LUMBER & PLYWOOD	0.	0.	0.	7.	0.	0.	50.9
0310 WOOD PRODUCTS	0.	0.	0.	3.	0.	0.	44.9
0320 FURNITURE & FIXTURES	0.	0.	0.	8.	1.	0.	98.2
0330 PULP&PAPER DUMMY & INTRA-TRANSFE	0.	0.	0.	0.	0.	0.	170.5
0340 PULP	0.	0.	0.	1.	0.	0.	10.8
0350 NEWSPRINT	0.	0.	0.	0.	0.	0.	18.2
0360 OTHER PAPER STOCK	0.	0.	0.	9.	1.	0.	106.8
0370 INDUSTRIAL PAPER PRODUCTS	0.	0.	0.	14.	2.	0.	161.9
0380 HOUSEHOLD PAPER PRODUCTS	0.	0.	0.	1.	0.	0.	23.1
0390 PRINTED MATTER	0.	0.	0.	39.	2.	1.	251.8
0401 IRON & STEEL DUMMY & INTRA-TRANS	0.	0.	0.	0.	0.	0.	710.3
0402 IRON & STEEL PRODUCTS	0.	0.	0.	95.	6.	0.	515.7
0410 ALUMINUM PRODUCTS	0.	0.	0.	78.	3.	0.	198.5
0420 COPPER & COPPER ALLOY PRODUCTS	0.	0.	0.	4.	0.	0.	86.1
0430 NICKEL PRODUCTS	0.	0.	0.	3.	0.	0.	5.1
0440 OTHER NON-FERROUS METAL PRODUCTS	0.	0.	0.	31.	0.	0.	40.9
0450 METAL FABRICATED PRODUCTS	2177.	89.	2088.	187.	26.	0.	2526.2
0460 AGRICULTURAL MACHINERY	0.	0.	0.	7.	0.	0.	1.8
0470 OTHER INDUSTRIAL MACHINERY	0.	0.	0.	75.	6.	0.	57.5
0480 MOTOR VEHICLES	0.	0.	0.	101.	3.	0.	245.0
0490 MOTOR VEHICLE PARTS	0.	0.	0.	160.	3.	0.	93.4

0000	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0500	OTHER TRANSPORT EQUIPMENT	0.	0.	0.	12.	1.	0.	38.0
0510	APPLIANCES	0.	0.	0.	37.	6.	0.	96.4
0520	OTHER ELECTRICAL EQUIPMENT	0.	0.	0.	34.	5.	0.	90.3
0530	CEMENT & CONCRETE PRODUCTS	3166.	5.	3161.	13.	1.	0.	3543.7
0540	OTHER NON-METALLIC MIN. PRODS.	0.	0.	0.	61.	4.	0.	99.5
0550	FUEL & PETROLEUM	0.	0.	0.	35.	2.	0.	272.5
0560	OTHER PETROLEUM & COAL PROD.	0.	0.	0.	18.	1.	0.	44.5
0570	INDUSTRIAL CHEMICALS	0.	0.	0.	75.	4.	0.	130.7
0580	FERTILIZERS	0.	0.	0.	2.	0.	0.	10.2
0590	PHARMACEUTICAL	0.	0.	0.	9.	1.	0.	41.8
0600	OTHER CHEMICAL PRODUCTS	0.	0.	0.	38.	4.	0.	204.0
0610	SCIENTIFIC EQUIPMENT	0.	0.	0.	39.	3.	0.	17.8
0620	PLASTIC PRODUCTS	0.	0.	0.	17.	2.	0.	48.3
0630	OTHER MANUFACTURED PRODUCTS	0.	0.	0.	45.	6.	0.	107.3
0640	RESIDENTIAL DWELLINGS	0.	0.	0.	0.	0.	0.	0.0
0650	NON-RESIDENTIAL BUILDINGS	0.	0.	0.	0.	0.	0.	0.0
0660	ROADS, HIGHWAYS & AIRSTRIPS	0.	0.	0.	0.	0.	0.	0.0
0670	GAS & OIL FACILITIES	0.	0.	0.	0.	0.	0.	0.0
0680	DAMS & IRRIGATION PROJECTS	0.	0.	0.	0.	0.	0.	0.0
0690	RR., TELEPHONE & TELEGRAPH INST.	0.	0.	0.	0.	0.	0.	0.0
0700	OTHER ENGINEERING STRUCTURES	0.	0.	0.	0.	0.	0.	0.0
0710	REPAIR CONSTRUCTION	0.	0.	0.	0.	0.	0.	325.2
0720	TRANSPORTATION SERVICES	0.	0.	0.	19.	0.	4.	1032.2
0730	TRANSPORTATION MARGINS	173.	0.	173.	2.	0.	0.	606.4
0740	COMMUNICATION	0.	0.	0.	2.	0.	0.	358.3
0750	ELECTRIC POWER	0.	0.	0.	0.	0.	0.	259.9
0760	GAS & PIPELINE MARGINS	0.	0.	0.	0.	0.	38.	98.8
0770	OTHER UTILITIES	0.	0.	0.	0.	0.	0.	6.6
0780	WHOLESALE TRADE	237.	0.	237.	0.	0.	0.	1132.3
0790	RETAIL TRADE	0.	0.	0.	27.	0.	20.	1293.6
0800	FINANCE, INS., & REAL ESTATE	0.	0.	0.	0.	0.	0.	1362.8
0810	IMPUTED RENT	0.	0.	0.	0.	0.	60.	827.9
0820	PERSONAL SERVICES	0.	0.	0.	24.	0.	0.	1295.2
0830	BUSINESS SERVICES	0.	0.	0.	25.	0.	0.	264.3
0840	DUMMY	0.	0.	0.	0.	0.	0.	1405.1
0850	NON-COMPETING IMPORTS	0.	0.	0.	74.	3.	0.	0.0
0860	BALANCE OF PAYMENTS ADJUSTMENT	0.	0.	0.	74.	0.	0.	0.0
0870	INCOME & EXPENDITURE ACC'T ADJ.	0.	0.	0.	0.	0.	0.	0.0
0880	GOVERNMENT GOODS & SERVICES	0.	0.	0.	0.	0.	0.	0.0
0890	INDIRECT COMMODITY TAXES	570.	0.	570.	0.	0.	0.	0.0
0900	SUBSIDIES	0.	0.	0.	0.	0.	0.	0.0
0910	OTHER INDIRECT TAXES	0.	0.	0.	0.	0.	0.	0.0
0920	WAGES & SALARIES	3161.	0.	3161.	0.	0.	0.	8994.8
0930	SUPPLEMENTARY LABOUR INCOME	0.	0.	0.	0.	0.	0.	307.9
0940	NET INCOME OF UNINCORP. BUSINESS	0.	0.	0.	0.	0.	0.	1142.4
0951	HOUSEHOLD INVESTMENT INCOME	0.	0.	0.	0.	0.	0.	840.6
0952	DEPLETION & MINING WRITE-OFFS	0.	0.	0.	0.	0.	0.	0.0
0953	CAPITAL COST ALLOWANCE	0.	0.	0.	0.	0.	0.	0.0
0954	OTHER SURPLUS	0.	0.	0.	0.	0.	0.	0.0
0960	TOTAL	9484.	93.	9391.	2136.	144.	125.	35224.0

SECTION A: IMPACT ANALYSIS OF EXPENSES ON MECHANICAL 1966 I-O MODEL.

0.00 INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0010 WHEAT	0.	0.	0.	121.	5.	0.	704.2
0020 OTHER AGRICULTURE	0.	0.	0.	1257.	44.	23.	12131.7
0030 FOREST PRODUCTS	0.	0.	0.	23.	0.	0.	1017.6
0040 FISHING & TRAPPING PRODUCTS	0.	0.	0.	99.	1.	0.	296.1
0050 CRUDE PETROLEUM	0.	0.	0.	1502.	56.	0.	1814.7
0060 NATURAL GAS	0.	0.	0.	73.	5.	0.	215.8
0070 SULP OR	0.	0.	0.	10.	0.	0.	9.9
0080 COAL	0.	0.	0.	638.	17.	0.	257.1
0090 IRON ORE	0.	0.	0.	412.	0.	0.	135.8
0100 ASBESTOS	0.	0.	0.	3.	0.	0.	8.6
0110 OTHER MINERALS	0.	0.	0.	374.	2.	0.	1308.0
0120 MEAT PRODUCTS	0.	0.	0.	443.	19.	0.	9587.2
0130 DAIRY PRODUCTS	0.	0.	0.	166.	17.	0.	4975.8
0140 FISH PRODUCTS	0.	0.	0.	80.	9.	0.	542.4
0150 FEED	0.	0.	0.	13.	1.	0.	1256.2
0160 FLOUR & WHEAT	0.	0.	0.	0.	0.	0.	540.2
0170 OTHER GRAIN MILL PRODUCTS	0.	0.	0.	47.	4.	0.	390.1
0180 BAKERY PRODUCTS	0.	0.	0.	51.	4.	0.	2576.5
0190 SOFT DRINKS	0.	0.	0.	8.	0.	0.	1008.2
0200 OTHER FOOD PRODUCTS	0.	0.	0.	1228.	82.	0.	6003.0
0210 ALCOHOLIC BEVERAGES	0.	0.	0.	382.	183.	0.	2045.6
0220 TOBACCO	0.	0.	0.	63.	15.	0.	1800.8
0230 TIRES & TUBES	0.	0.	0.	54.	10.	0.	777.7
0240 OTHER RUBBER PRODUCTS	0.	0.	0.	324.	40.	0.	758.6
0250 LEATHER PRODUCTS	0.	0.	0.	323.	47.	0.	1605.5
0260 YARNS & MAN-MADE FIBRES	0.	0.	0.	461.	36.	0.	1206.8
0270 FABRICS	0.	0.	0.	1267.	230.	0.	2174.3
0280 TEXTILE PRODUCTS	0.	0.	0.	389.	55.	0.	1965.9
0290 CLOTHING	0.	0.	0.	604.	120.	1.	6347.3
0300 LUMBER & PLYWOOD	0.	0.	0.	99.	3.	0.	716.9
0310 WOOD PRODUCTS	0.	0.	0.	56.	3.	0.	715.1
0320 FURNITURE & FIXTURES	0.	0.	0.	156.	27.	0.	1917.4
0330 PULP&PAPER DUMMY & INTRA-TRANSFE	0.	0.	0.	0.	0.	0.	2948.0
0340 PULP	0.	0.	0.	16.	0.	0.	188.9
0350 NEWSPRINT	0.	0.	0.	1.	0.	0.	327.8
0360 OTHER PAPER STOCK	0.	0.	0.	156.	19.	0.	1798.8
0370 INDUSTRIAL PAPER PRODUCTS	0.	0.	0.	257.	28.	0.	2875.4
0380 HOUSEHOLD PAPER PRODUCTS	0.	0.	0.	26.	3.	0.	427.4
0390 PRINTED MATTER	0.	0.	0.	726.	28.	17.	4529.0
0401 IRON & STEEL DUMMY & INTRA-TRANS	0.	0.	0.	0.	0.	0.	19373.0
0402 IRON & STEEL PRODUCTS	24068.	7806.	16263.	9452.	732.	0.	27726.3
0410 ALUMINUM PRODUCTS	0.	0.	0.	222.	22.	0.	590.2
0420 COPPER & COPPER ALLOY PRODUCTS	0.	0.	0.	68.	5.	0.	1485.6
0430 NICKEL PRODUCTS	0.	0.	0.	68.	3.	0.	114.9
0440 OTHER NON-FERROUS METAL PRODUCTS	0.	0.	0.	496.	46.	0.	670.7
0450 METAL FABRICATED PRODUCTS	6882.	752.	6129.	2203.	249.	7.	11794.5
0460 AGRICULTURAL MACHINERY	0.	0.	0.	145.	0.	0.	45.8
0470 OTHER INDUSTRIAL MACHINERY	15164.	5159.	10004.	6900.	659.	0.	11343.5
0480 MOTOR VEHICLES	1857.	354.	1503.	2264.	61.	0.	6151.6
0490 MOTOR VEHICLE PARTS	0.	0.	0.	3386.	55.	0.	1962.7

SECTION A: IMPACT ANALYSIS OF EXPENSES ON MECHANICAL 1966 I-O MODEL

0000	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0500	OTHER TRANSPORT EQUIPMENT	0.	0.	0.	190.	15.	0.	679.6
0510	APPLIANCES	0.	0.	0.	733.	110.	0.	1915.6
0520	OTHER ELECTRICAL EQUIPMENT	368.	138.	229.	978.	137.	0.	2283.0
0530	CEMENT & CONCRETE PRODUCTS	4060.	6.	4053.	20.	1.	0.	4786.0
0540	OTHER NON-METALLIC MIN. PRODS.	0.	0.	0.	645.	45.	0.	1021.5
0550	FUELS & PETROLEUM	0.	0.	0.	580.	26.	0.	4493.9
0560	OTHER PETROLEUM & COAL PROD.	0.	0.	0.	295.	16.	0.	711.9
0570	INDUSTRIAL CHEMICALS	0.	0.	0.	1000.	52.	0.	2089.8
0580	FERTILIZERS	0.	0.	0.	46.	0.	0.	198.0
0590	PHARMACEUTICALS	0.	0.	0.	170.	18.	0.	782.1
0600	OTHER CHEMICAL PRODUCTS	0.	0.	0.	616.	57.	0.	3123.3
0610	SCIENTIFIC EQUIPMENT	0.	0.	0.	650.	48.	0.	326.4
0620	PLASTIC PRODUCTS	0.	0.	0.	243.	24.	0.	721.5
0630	OTHER MANUFACTURED PRODUCTS	0.	0.	0.	785.	105.	1.	1748.6
0640	RESIDENTIAL DWELLINGS	0.	0.	0.	0.	0.	0.	0.0
0650	NON-RESIDENTIAL BUILDINGS	0.	0.	0.	0.	0.	0.	0.0
0660	ROADS, HIGHWAYS & AIRSTRIPS	0.	0.	0.	0.	0.	0.	0.0
0670	GAS & OIL FACILITIES	0.	0.	0.	0.	0.	0.	0.0
0680	DAMS & IRRIGATION PROJECTS	0.	0.	0.	0.	0.	0.	0.0
0690	RR., TELEPHONE & TELEGRAPH INST.	0.	0.	0.	0.	0.	0.	0.0
0700	OTHER ENGINEERING STRUCTURES	0.	0.	0.	0.	0.	0.	0.0
0710	REPAIR CONSTRUCTION	0.	0.	0.	0.	0.	0.	5859.1
0720	TRANSPORTATION SERVICES	0.	0.	0.	260.	0.	65.	14710.0
0730	TRANSPORTATION MARGINS	1193.	0.	1193.	0.	0.	0.	7516.1
0740	COMMUNICATION	0.	0.	0.	37.	0.	4.	6448.9
0750	ELECTRIC POWER	0.	0.	0.	37.	0.	4.	4412.0
0760	GAS & PIPELINE MARGINS	0.	0.	0.	0.	0.	0.	1617.9
0770	OTHER UTILITIES	0.	0.	0.	0.	0.	675.	117.7
0780	WHOLESALE TRADE	4582.	0.	4582.	0.	0.	0.	18166.0
0790	RETAIL TRADE	0.	0.	0.	0.	0.	0.	23250.7
0800	FINANCE, INS., & REAL ESTATE	0.	0.	0.	501.	0.	358.	25249.6
0810	IMPUTED RENT	0.	0.	0.	0.	0.	0.	15618.3
0820	PERSONAL SERVICES	0.	0.	0.	431.	0.	1136.	22840.9
0830	BUSINESS SERVICES	26261.	980.	25247.	1392.	0.	39.	29539.5
0840	DUMMY	0.	0.	0.	0.	0.	0.	20412.3
0850	NON-COMPETING IMPORTS	0.	0.	0.	1380.	49.	0.	0.0
0860	BALANCE OF PAYMENTS ADJUSTMENT	0.	0.	0.	1119.	0.	0.	0.0
0870	INCOME & EXPENDITURE ACCT ADJ.	0.	0.	0.	0.	0.	0.	0.0
0880	GOVERNMENT GOODS & SERVICES	0.	0.	0.	0.	0.	0.	0.0
0890	INDIRECT COMMODITY TAXES	4059.	0.	4059.	0.	0.	0.	0.0
0900	SUBSIDIES	0.	0.	0.	0.	0.	0.	0.0
0910	OTHER INDIRECT TAXES	0.	0.	0.	0.	0.	0.	0.0
0920	WAGES & SALARIES	81799.	0.	81799.	0.	0.	0.	172421.6
0930	SUPPLEMENTARY LABOUR INCOME	0.	0.	0.	0.	0.	0.	4773.4
0940	NET INCOME OF UNINCORP. BUSINESS	0.	0.	0.	0.	0.	0.	22124.7
0951	HOUSEHOLD INVESTMENT INCOME	0.	0.	0.	0.	0.	0.	13584.2
0952	DEPLETION & MINING WRITE-OFFS	0.	0.	0.	0.	0.	0.	0.0
0953	CAPITAL COST ALLOWANCE	0.	0.	0.	0.	0.	0.	0.0
0954	OTHER SURPLUS	0.	0.	0.	0.	0.	0.	0.0
0960	TOTAL	170292.	15195.	155162.	49164.	3540.	2329.	594708.4

SECTION A: IMPACT ANALYSIS OF EXPENSES ON ELECTRICAL 1966 I-O MODEL.

I-O	INPUT-OUTPUT COMMOD. AGGN.SB	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0 1[illegible]	GRAI	0.	0.	0.	35.	1.	0.	199.1
0 2[illegible]	OTHER AGRICULTURE	0.	0.	0.	361.	13.	7.	3387.0
0 3[illegible]	FOREST PRODUCTS	0.	0.	0.	5.	0.	0.	254.9
0 4[illegible]	FISHING & TRAPPING PRODUCTS	0.	0.	0.	28.	0.	0.	83.4
0 5[illegible]	CRUDE PETROLEUM	0.	0.	0.	391.	0.	0.	472.8
0 5[illegible]	NATURAL GAS	0.	0.	0.	18.	1.	0.	54.6
0 7[illegible]	SOLID CO	0.	0.	0.	2.	0.	0.	2.5
0 8[illegible]	COAL	0.	0.	0.	114.	3.	0.	48.0
0 9[illegible]	IRON ORE	0.	0.	0.	23.	0.	0.	7.7
0105[illegible]	ASBESTOS	0.	0.	0.	1.	0.	0.	1.8
0115[illegible]	OTHER MINERALS	0.	0.	0.	93.	0.	0.	539.4
0125[illegible]	MEAT PRODUCTS	0.	0.	0.	129.	6.	0.	2786.8
0135[illegible]	DAIRY PRODUCTS	0.	0.	0.	32.	5.	0.	1455.4
0145[illegible]	FISH PRODUCTS	0.	0.	0.	23.	0.	0.	155.7
0155[illegible]	FEED	0.	0.	0.	4.	0.	0.	351.3
0165[illegible]	FLOUR & WHEAT	0.	0.	0.	0.	0.	0.	157.2
0175[illegible]	OTHER GRAIN MILL PRODUCTS	0.	0.	0.	14.	1.	0.	113.2
0185[illegible]	BAKERY PRODUCTS	0.	0.	0.	15.	1.	0.	755.5
0195[illegible]	SOFT DRINKS	0.	0.	0.	2.	0.	0.	296.5
0205[illegible]	OTHER FOOD PRODUCTS	0.	0.	0.	355.	24.	0.	1754.2
0215[illegible]	ALCOHOLIC BEVERAGES	0.	0.	0.	111.	53.	0.	599.1
0225[illegible]	TOBACCO	0.	0.	0.	14.	25.	0.	531.9
0235[illegible]	TIRES & TUBES	0.	0.	0.	87.	11.	0.	183.4
0245[illegible]	OTHER RUBBER PRODUCTS	0.	0.	0.	95.	14.	0.	211.6
0255[illegible]	LEATHER PRODUCTS	0.	0.	0.	133.	11.	0.	471.8
0265[illegible]	YARNS & MAN-MADE FIBRES	0.	0.	0.	374.	67.	0.	354.6
0275[illegible]	FABRICS	0.	0.	0.	110.	16.	0.	635.1
0285[illegible]	TEXTILE PRODUCTS	0.	0.	0.	178.	35.	0.	552.8
0295[illegible]	CLOTHING	0.	0.	0.	24.	1.	0.	1867.8
0305[illegible]	LUMBER & PLYWOOD	0.	0.	0.	11.	1.	0.	177.5
0315[illegible]	WOOD PRODUCTS	0.	0.	0.	48.	8.	0.	172.5
0325[illegible]	FURNITURE & FIXTURES	0.	0.	0.	0.	0.	0.	562.6
0335[illegible]	PULP,PAPER DUMMY & INTRA-TRANSFE	0.	0.	0.	4.	0.	0.	760.4
0345[illegible]	PULP	0.	0.	0.	0.	0.	0.	50.5
0355[illegible]	NEWSPRINT	0.	0.	0.	40.	5.	0.	84.2
0365[illegible]	OTHER PAPER STOCK	0.	0.	0.	75.	8.	0.	458.6
0375[illegible]	INDUSTRIAL PAPER PRODUCTS	0.	0.	0.	8.	1.	0.	781.4
0385[illegible]	HOUSEHOLD PAPER PRODUCTS	0.	0.	0.	204.	7.	5.	121.9
0395[illegible]	PRINTED MATTER	0.	0.	0.	0.	0.	0.	1163.4
0401[illegible]	IRON & STEEL DUMMY & INTRA-TRANS	0.	0.	0.	125.	8.	0.	1017.6
0402[illegible]	IRON & STEEL PRODUCTS	0.	0.	0.	120.	5.	0.	784.0
0410[illegible]	ALUMINUM PRODUCTS	0.	0.	0.	51.	4.	0.	306.2
0420[illegible]	COPPER & COPPER ALLOY PRODUCTS	0.	0.	0.	17.	0.	0.	1588.4
0430[illegible]	NICKEL PRODUCTS	0.	0.	0.	100.	2.	0.	35.1
0440[illegible]	OTHER NON-FERROUS METAL PRODUCTS	0.	0.	0.	382.	34.	1.	148.2
0450[illegible]	METAL FABRICATED PRODUCTS	0.	0.	0.	29.	0.	0.	1103.2
0460[illegible]	AGRICULTURAL MACHINERY	0.	0.	0.	295.	22.	0.	6.4
0470[illegible]	OTHER INDUSTRIAL MACHINERY	0.	0.	0.	561.	15.	0.	220.0
0480[illegible]	MOTOR VEHICLES	0.	0.	0.	784.	13.	0.	1364.0
0490[illegible]	MOTOR VEHICLE PARTS	0.	0.	0.				455.0

SECTION 4: IMPACT ANALYSIS OF EXPENSES ON ELECTRICAL 1956 I-O MODEL.

0000	INPUT-OUTPUT COMMOD. AGGN.SH	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
0500	OTHER TRANSPORT EQUIPMENT	0.	0.	0.	53.	3.	0.	175.7
0510	APPLIANCES	0.	0.	0.	241.	36.	0.	628.4
0520	OTHER ELECTRICAL EQUIPMENT	9620.	1724.	7896.	2136.	330.	0.	8953.9
0530	CEMENT & CONCRETE PRODUCTS	0.	0.	0.	0.	0.	0.	53.0
0540	OTHER NON-METALLIC MIN. PRODS.	0.	0.	0.	168.	13.	0.	298.0
0550	FUEL & PETROLEUM	0.	0.	0.	150.	7.	1.	1181.4
0560	OTHER PETROLEUM & COAL PROD.	0.	0.	0.	63.	4.	0.	169.8
0570	INDUSTRIAL CHEMICALS	0.	0.	0.	275.	14.	0.	571.1
0580	FERTILIZERS	0.	0.	0.	13.	0.	0.	53.7
0590	PHARMACEUTICALS	0.	0.	0.	49.	5.	0.	226.7
0600	OTHER CHEMICAL PRODUCTS	0.	0.	0.	169.	15.	0.	843.5
0610	SCIENTIFIC EQUIPMENT	0.	0.	0.	199.	15.	0.	103.3
0620	PLASTIC PRODUCTS	0.	0.	0.	73.	7.	0.	212.4
0630	OTHER MANUFACTURED PRODUCTS	0.	0.	0.	219.	2.	0.	475.4
0640	RESIDENTIAL DWELLINGS	0.	0.	0.	0.	0.	0.	0.0
0650	NON-RESIDENTIAL BUILDINGS	0.	0.	0.	0.	0.	0.	0.0
0660	ROADS, HIGHWAYS & AIRSTRIPS	0.	0.	0.	0.	0.	0.	0.0
0670	GAS & OIL FACILITIES	0.	0.	0.	0.	0.	0.	0.0
0680	DAMS & IRRIGATION PROJECTS	0.	0.	0.	0.	0.	0.	0.0
0690	RR., TELEPHONE & TELEGRAPH INST.	0.	0.	0.	0.	0.	0.	0.0
0700	OTHER ENGINEERING STRUCTURES	0.	0.	0.	0.	0.	0.	0.0
0710	REPAIR CONSTRUCTION	0.	0.	0.	59.	17.	0.	1464.1
0720	TRANSPORTATION SERVICES	0.	0.	0.	0.	0.	0.	3494.6
0730	TRANSPORTATION MARGINS	136.	0.	136.	0.	0.	0.	1632.0
0740	COMMUNICATION	0.	0.	0.	10.	1.	0.	1661.3
0750	ELECTRIC POWER	0.	0.	0.	0.	0.	0.	1155.2
0760	GAS & PIPELINE MARGINS	0.	0.	0.	0.	0.	195.	422.0
0770	OTHER UTILITIES	0.	0.	0.	0.	0.	0.	34.0
0780	WHOLESALE TRADE	570.	0.	570.	0.	0.	0.	4113.6
0790	RETAIL TRADE	0.	0.	0.	0.	0.	0.	6722.9
0800	FINANCE, INS., & REAL ESTATE	0.	0.	0.	138.	0.	93.	6976.2
0810	IMPUTED RENT	0.	0.	0.	0.	0.	0.	4614.6
0820	PERSONAL SERVICES	0.	0.	0.	106.	0.	333.	6502.8
0830	BUSINESS SERVICES	0.	0.	0.	106.	0.	1.	1084.4
0840	DUMMY	0.	0.	0.	0.	0.	0.	4692.4
0850	NON-COMPETING IMPORTS	0.	0.	0.	397.	14.	0.	0.0
0860	BALANCE OF PAYMENTS ADJUSTMENT	0.	0.	0.	253.	0.	0.	0.0
0870	INCOME & EXPENDITURE ACC'T ADJ.	0.	0.	0.	0.	0.	0.	0.0
0880	GOVERNMENT GOODS & SERVICES	0.	0.	0.	0.	0.	0.	0.0
0890	INDIRECT COMMODITY TAXES	311.	0.	311.	0.	0.	0.	0.0
0900	SUBSIDIES	0.	0.	0.	0.	0.	0.	0.0
0910	OTHER INDIRECT TAXES	0.	0.	0.	0.	0.	0.	5281.8.3
0920	WAGES & SALARIES	31256.	0.	31256.	0.	0.	0.	1128.8
0930	SUPPLEMENTARY LABOUR INCOME	0.	0.	0.	0.	0.	0.	5710.5
0940	NET INCOME OF UNINCORP. BUSINESS	0.	0.	0.	0.	0.	0.	3246.7
0950	HOUSEHOLD INVESTMENT INCOME	0.	0.	0.	0.	0.	0.	0.0
0960	DEPLETION & MINING WRITE-OFFS	0.	0.	0.	0.	0.	0.	0.0
0970	CAPITAL COST ALLOWANCE	0.	0.	0.	0.	0.	0.	0.0
0980	OTHER SURPLUS	0.	0.	0.	0.	0.	0.	0.0
0990	TOTAL	41893.	1724.	40168.	10538.	900.	655.	151065.1

B.4 IMPACT ANALYSIS OF USUAL CAPITAL EXPENDITURE BY THE PULP AND PAPER IDNUSTRY, 1966 I-O MODEL

SECTION C: INC.&EXPDT. ACC'T(DOMESTIC)

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE	327178.	WAGES,SALARIES, S.L.I.	336528.
FINAL DEMAND	478318.	NET INCOME OF UNINCORP. BUS.	41673.
IMPORTS LESS DUTIES	-205025.	SURPLUS	122999.
GOVT. REVENUE FROM PRODUCTION	-5430.	G.D.P. AT FACTOR COST	501200.
		TAXES & DUTIES LESS SUBSIDIES	93836.
TOTAL	595041.		595037.

SECTION D: HOUSEHOLD ACCOUNT

EXPENDITURE		INCOME	
CONSUMER EXPENDITURE ON G&S	327178.	WAGES& SALARIES	325541.
PERSONAL INCOME TAXES	34443.	SUPPL. LABOUR INCOME	10984.
PERSONAL SAVINGS	23518.	NET INCOME OF UNINCORP. BUS.	41673.
OTHER TRANSFERS TO GOVTS	20209.	INVESTMENT INCOME	30228.
OTHER TRANSFERS	3080.	TRANSFERS	0.
TOTAL	408427.		408426.

SECTION E: GOVERNMENT REVENUE

REVENUE	
COMMODITY TAXES	58506.
NON-COMMODITY TAXES	23790.
GOV'T GOODS & SERVICES	5430.
RESOURCE TAXES	931.
IMPORT DUTIES	16326.
PERSONAL INCOME TAXES	34443.
CORPORATION TAXES	19864.
SUBSIDIES	-4786.
OTHER TRANSFERS FROM HHLDS.	20209.
TOTAL	174713.

SECTION F: BUSINESS SECTOR ACCOUNT

REVENUE		EXPENDITURE	
GROSS PRODUCTION	730916.	INTERMEDIATE GOODS & SERVICES	333197.
SUBSIDIES	4786.	INDIRECT TAXES	29932.
		WAGES,SALARIES & S.L.I.	208465.
		NET INCOME OF UNINCORP. BUS.	41673.
		INT. & DIV. PAID TO PERSONS	30228.
		DEPLETION & MINING W.=O.	2380.
		CAPITAL COST ALLOWANCE	46436.
		OTHER SURPLUS	43390.
TOTAL	735701.		735701.

00000	INPUT-OUTPUT MMLD. IND AGGREGATN	DOMESTIC FINAL DEMAND	TOTAL DOMESTIC OUTPUT	INDIRECT TAXES LESS SUBSIDIES	SALARIES & WAGES + S.L.I.	NET INCOME UNINCORP BUSINESS	SURPLUS	EMPLOYMENT IN MAN-YEARS
00100	AGRICULTURE	0.	24734.	83.	1435.	10293.	3786.	400.5
00200	FORESTRY	84.	2531.	119.	972.	49.	205.	133.1
00300	FISHING & TRAPPING	0.	585.	10.	130.	101.	44.	47.8
00400	PETROLEUM & GAS WELLS	214.	4810.	219.	398.	0.	2434.	39.6
00500	MINES	1380.	5313.	-91.	1040.	17.	2158.	214.5
00600	MEAT PRODUCTS INDUSTRIES	148.	14956.	77.	1006.	17.	606.	257.5
00700	DAIRY PRODUCTS INDUSTRIES	302.	10053.	61.	1440.	50.	611.	212.9
00800	FISH PRODUCTS INDUSTRIES	49.	1153.	7.	253.	1.	64.	58.9
00900	GRAIN MILLS	224.	4526.	-8.	466.	15.	460.	68.0
01000	OTHER FOOD & SOFT DRINK IND.	453.	19579.	247.	4207.	112.	2459.	744.5
01100	ALCOHOLIC BEVERAGE IND.	87.	4100.	110.	810.	0.	1297.	96.9
01200	TOBACCO INDUSTRIES	31.	3513.	20.	485.	0.	532.	76.0
01300	RUBBER INDUSTRIES	320.	4561.	47.	1265.	1.	736.	166.9
01400	LEATHER INDUSTRIES	20.	3130.	26.	1050.	7.	73.	239.4
01500	TEXTILE INDUSTRIES	531.	13230.	120.	3457.	22.	1224.	642.7
01600	CLOTHING MANUFACTURERS	93.	9895.	43.	3050.	55.	654.	744.4
01700	WOOD INDUSTRIES	322.	8804.	32.	1001.	22.	336.	166.8
01800	FURNITURE MANUFACTURERS	1871.	5700.	57.	1841.	57.	700.	352.6
01900	PULP & PAPER INDUSTRIES	1245.	20594.	230.	5365.	44.	2103.	464.5
02000	PRINTING & PUBLISHING	191.	10182.	150.	4087.	174.	1216.	641.2
02100	IRON & STEEL	2084.	41316.	192.	5401.	4.	4059.	741.2
02200	NON-FERROUS METALS	1523.	11100.	103.	1456.	3.	609.	291.9
02300	METAL FABRICATING	23619.	42180.	380.	13830.	152.	4944.	1908.9
02400	MACHINERY	63823.	70004.	442.	20364.	43.	8910.	2787.8
02500	MOTOR VEHICLES	15619.	31509.	267.	5817.	16.	2335.	562.5
02600	OTHER TRANSPORTATION EQUIPMENT	7166.	9003.	111.	3420.	5.	759.	445.7
02700	ELECTRICAL PRODUCTS	15910.	29756.	272.	9342.	4.	3411.	1500.8
02800	NON-METALLIC MINERAL PRODUCTS	265.	3145.	50.	974.	6.	556.	132.9
02900	PETROLEUM & COAL PRODUCTS	89.	10359.	76.	658.	0.	753.	57.2
03000	INDUSTRIAL CHEMICALS	354.	3999.	82.	775.	0.	1062.	83.3
03100	CHEMICAL PRODUCTS	743.	10058.	116.	2186.	5.	1373.	276.8
03200	MISCELLANEOUS MANUFACTURERS	4301.	10943.	99.	3536.	75.	1545.	554.8
03300	CONSTRUCTION	0.	11781.	522.	6238.	444.	471.	768.4
03400	TRANSPORTATION & STORAGE	39.	35789.	813.	14640.	1013.	7586.	1974.4
03500	COMMUNICATION	7178.	21121.	-1165.	8834.	0.	6180.	1214.3
03600	UTILITIES	7.	10644.	179.	2482.	0.	6312.	290.1
03700	TRADE	30456.	111232.	2773.	46807.	8261.	17294.	8849.1
03800	FINANCE, INS., & REAL ESTATE	0.	48212.	5925.	12604.	3748.	13068.	2002.0
03900	OWNER-OCCUPIED DWELLINGS	0.	29905.	7831.	0.	5994.	11991.	0.0
04000	OTHER SERVICES	32.	50567.	1171.	16061.	10866.	5320.	3900.0
04100	DUMMY INDUSTRIES	5276.	62484.	2331.	0.	0.	0.	0.0
04200	HOUSEHOLDS	119579.	408428.	26827.	8464.	0.	565.	0.0
04300	TOTAL	311869.	1230873.	51972.	216949.	41673.	122999.	33974.4

00000	INPUT-OUTPUT COMMOD. AGGN.SO	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
00100	GRAIN	0.	0.	0.	241.	10.	0.	1411.
00200	OTHER AGRICULTURE	0.	0.	0.	2421.	84.	44.	22795.
00300	FOREST PRODUCTS	0.	0.	0.	52.	0.	0.	2237.
00400	FISHING & TRAPPING PRODUCTS	0.	0.	0.	145.	2.	1.	583.
00500	CRUDE PETROLEUM	0.	0.	0.	5051.	0.	0.	5662.
00600	NATURAL GAS	0.	0.	0.	140.	9.	0.	417.
00700	SULPHUR	0.	0.	0.	22.	0.	0.	23.
00800	COAL	0.	0.	0.	1097.	24.	0.	442.
00900	IRON ORE	0.	0.	0.	510.	0.	0.	168.
01000	ASBESTOS	0.	0.	0.	0.	0.	0.	21.
01100	OTHER MINERALS	0.	0.	0.	1141.	3.	0.	3156.
01200	MEAT PRODUCTS	0.	0.	0.	855.	57.	0.	18371.
01300	DAIRY PRODUCTS	0.	0.	0.	210.	33.	0.	9620.
01400	FISH PRODUCTS	0.	0.	0.	155.	17.	0.	1046.
01500	FEED	0.	0.	0.	25.	1.	0.	2390.
01600	FLOUR & WHEAT	0.	0.	0.	0.	0.	0.	1061.
01700	OTHER GRAIN MILL PRODUCTS	0.	0.	0.	92.	8.	0.	755.
01800	BAKERY PRODUCTS	0.	0.	0.	98.	8.	0.	4948.
01900	SOFT DRINKS	0.	0.	0.	15.	1.	0.	1936.
02000	OTHER FOOD PRODUCTS	0.	0.	0.	2410.	163.	0.	11618.
02100	ALCOHOLIC BEVERAGES	0.	0.	0.	749.	359.	0.	3976.
02200	TOBACCO	0.	0.	0.	121.	29.	0.	3463.
02300	TIRES & TUBES	0.	0.	0.	141.	23.	0.	1798.
02400	OTHER RUBBER PRODUCTS	101.	35.	66.	872.	109.	0.	2027.
02500	LEATHER PRODUCTS	0.	0.	0.	825.	91.	0.	3101.
02600	YARNS & MAN-MADE FIBRES	0.	0.	0.	948.	75.	0.	2495.
02700	FABRICS	0.	0.	0.	2000.	479.	0.	4522.
02800	TEXTILE PRODUCTS	59.	11.	48.	799.	112.	0.	4090.
02900	CLOTHING	0.	0.	0.	1100.	231.	2.	12223.
03000	LUMBER & PLYWOOD	0.	0.	0.	255.	11.	0.	1709.
03100	WOOD PRODUCTS	0.	0.	0.	100.	5.	0.	1445.
03200	FURNITURE & FIXTURES	2282.	138.	2145.	445.	78.	0.	5868.
03300	PULP&PAPER DUMMY & INTRA-TRANSFE	0.	0.	0.	0.	0.	0.	7235.
03400	PULP	0.	0.	0.	35.	0.	0.	404.
03500	NEWSPRINT	0.	0.	0.	33.	0.	0.	718.
03600	OTHER PAPER STOCK	0.	0.	0.	333.	42.	0.	3767.
03700	INDUSTRIAL PAPER PRODUCTS	0.	0.	0.	546.	58.	0.	6060.
03800	HOUSEHOLD PAPER PRODUCTS	0.	0.	0.	50.	5.	0.	829.
03900	PRINTED MATTER	0.	0.	0.	1452.	60.	32.	9801.
04010	IRON & STEEL DUMMY & INTRA-TRANS	0.	0.	0.	0.	0.	0.	21810.
04020	IRON & STEEL PRODUCTS	0.	0.	0.	3876.	207.	0.	18370.
04100	ALUMINUM PRODUCTS	0.	0.	0.	835.	35.	0.	2192.
04200	COPPER & COPPER ALLOY PRODUCTS	0.	0.	0.	241.	20.	0.	5156.
04300	NICKEL PRODUCTS	0.	0.	0.	216.	9.	0.	310.
04400	OTHER NON-FERROUS METAL PRODUCTS	0.	0.	0.	1185.	19.	0.	1609.
04500	METAL FABRICATED PRODUCTS	11072.	2047.	9025.	7008.	716.	30.	27031.
04600	AGRICULTURAL MACHINERY	0.	0.	0.	426.	1.	0.	176.
04700	OTHER INDUSTRIAL MACHINERY	224288.	125062.	99225.	131113.	9953.	1.	103855.
04800	MOTOR VEHICLES	18263.	3267.	14996.	6999.	240.	0.	24106.
04900	MOTOR VEHICLE PARTS	338.	60.	278.	10032.	182.	0.	6028.

00000	INPUT-OUTPUT COMMOD. AGGN.,SO	TOTAL FINAL DEMAND	DIRECT IMPORTS	DOMESTIC FINAL DEMAND	TOTAL IMPORTS	IMPORT DUTIES	TOTAL GOVERNMENT REVENUES	TOTAL DOMESTIC OUTPUT
05000	OTHER TRANSPORT EQUIPMENT	1528.	235.	1293.	1064.	74.	0.	3090.
05100	APPLIANCES	173.	126.	46.	1803.	267.	0.	4403.
05200	OTHER ELECTRICAL EQUIPMENT	10056.	3990.	14066.	7008.	1056.	0.	21979.
05300	CEMENT & CONCRETE PRODUCTS	0.	0.	0.	4.	0.	0.	420.
05400	OTHER NON-METALLIC MIN. PRODS.	0.	0.	0.	1447.	102.	0.	2459.
05500	FUELS & PETROLEUM	0.	0.	0.	1140.	52.	4.	9004.
05600	OTHER PETROLEUM & COAL PROD.	0.	0.	0.	646.	33.	0.	1430.
05700	INDUSTRIAL CHEMICALS	0.	0.	0.	2136.	110.	0.	4466.
05800	FERTILIZERS	0.	0.	0.	88.	0.	0.	379.
05900	PHARMACEUTICALS	0.	0.	0.	320.	55.	0.	1514.
06000	OTHER CHEMICAL PRODUCTS	0.	0.	0.	1357.	128.	0.	6418.
06100	SCIENTIFIC EQUIPMENT	6735.	5939.	2796.	7479.	554.	0.	3574.
06200	PLASTIC PRODUCTS	0.	0.	0.	550.	51.	0.	1609.
06300	OTHER MANUFACTURED PRODUCTS	0.	0.	0.	1629.	215.	2.	3523.
06400	RESIDENTIAL DWELLINGS	0.	0.	0.	0.	0.	0.	0.
06500	NON-RESIDENTIAL BUILDINGS	0.	0.	0.	0.	0.	0.	0.
06600	ROADS, HIGHWAYS & AIRSTRIPS	0.	0.	0.	0.	0.	0.	0.
06700	GAS & OIL FACILITIES	0.	0.	0.	0.	0.	0.	0.
06800	DAMS & IRRIGATION PROJECTS	0.	0.	0.	0.	0.	0.	0.
06900	RR, TELEPHONE & TELEGRAPH INST.	0.	0.	0.	0.	0.	0.	0.
07000	OTHER ENGINEERING STRUCTURES	0.	0.	0.	0.	0.	0.	0.
07100	REPAIR CONSTRUCTION	0.	0.	0.	0.	0.	0.	11240.
07200	TRANSPORTATION SERVICES	0.	0.	0.	615.	0.	141.	33834.
07300	TRANSPORTATION MARGINS	5276.	0.	5276.	0.	0.	0.	17764.
07400	COMMUNICATION	0.	0.	0.	79.	0.	1.	15382.
07500	ELECTRIC POWER	0.	0.	0.	72.	0.	9.	8691.
07600	GAS & PIPELINE MARGINS	0.	0.	0.	0.	0.	0.	3141.
07700	OTHER UTILITIES	0.	0.	0.	0.	0.	1315.	229.
07800	WHOLESALE TRADE	40072.	0.	40072.	0.	0.	0.	69463.
07900	RETAIL TRADE	2958.	0.	2958.	0.	0.	1.	48095.
08000	FINANCE, INS., & REAL ESTATE	0.	0.	0.	1020.	0.	727.	50158.
08100	IMPUTED RENT	0.	0.	0.	0.	0.	0.	29962.
08200	PERSONAL SERVICES	0.	0.	0.	912.	0.	2178.	45238.
08300	BUSINESS SERVICES	0.	0.	0.	900.	0.	8.	94408.
08400	DUMMY	0.	0.	0.	0.	0.	0.	44719.
08500	NON-COMPETING IMPORTS	0.	0.	0.	2761.	95.	0.	0.
08600	BALANCE OF PAYMENTS ADJUSTMENT	0.	0.	0.	2394.	0.	0.	0.
08700	INCOME & EXPENDITURE ACCTT ADJ.	0.	0.	0.	0.	0.	0.	0.
08800	GOVERNMENT GOODS & SERVICES	0.	0.	0.	0.	0.	0.	0.
08900	INDIRECT COMMODITY TAXES	25538.	0.	25538.	0.	0.	0.	0.
09000	SUBSIDIES	0.	0.	0.	0.	0.	0.	0.
09100	OTHER INDIRECT TAXES	0.	0.	0.	0.	0.	0.	0.
09200	WAGES & SALARIES	119579.	0.	119579.	0.	0.	0.	325541.
09300	SUPPLEMENTARY LABOUR INCOME	0.	0.	0.	0.	0.	0.	10984.
09400	NET INCOME OF UNINCORP. BUSINESS	0.	0.	0.	0.	0.	0.	41673.
09510	HOUSEHOLD INVESTMENT INCOME	0.	0.	0.	0.	0.	0.	30228.
09520	DEPLETION & MINING WRITE-OFFS	0.	0.	0.	0.	0.	0.	0.
09530	CAPITAL COST ALLOWANCE	0.	0.	0.	0.	0.	0.	0.
09540	OTHER SURPLUS	0.	0.	0.	0.	0.	0.	0.
09600	TOTAL	478318.	140910.	337407.	221355.	16326.	4497.	1230871.

C METHODOLOGY OF THE STATISTICS CANADA INPUT-OUTPUT MODELS - AN ILLUSTRATION

1. Definition of Symbols

g = (k x 1) vector of values of total industry outputs.

$\hat{g}$ = (k x k) diagonal matrix of values of total industry outputs.

q = (n x 1) vector of values of total commodity outputs.

$\hat{q}$ = (n x n) diagonal matrix of values of total commodity outputs.

V = (k x n) matrix of values of industry outputs by commodity outputs.

U = (n x k) matrix of values of intermediate outputs.

i = (k x 1) unit column vector

e = (n x 1) vector of values of commodity final demands (minus imports which have been taken as zero in this study).

2. Assumptions

$$g = Dq \qquad \text{(i)}$$

where $D = \hat{Vq}^{-1}$. Observed industry market shares are fixed by commodity.

$$Ui = Bg \qquad \text{(ii)}$$

where $B = U\hat{g}^{-1}$. Input values are fixed proportions of total output values for individual industry production functions.

For simplicity, assume no indirect import leakages.

By definition:

$$q = Bg + e \qquad \text{(iii)}$$

3. An Industry Output Model

Premultiplying (iii) by D;

$$Dq = DBg + De \qquad \text{(iv)}$$

and, substituting (i) into (iv);

$$g = DBg + De$$

$$g = (I - DB)^{-1} De \qquad \text{(v)}$$

Equation (v) can be interpreted as follows. Industry outputs, g, required to meet final commodity demands, e, are equal to De the (k x 1) vector of final commodity demands allocated among industries, to determine the amount to be supplied by each industry, times the "industry output multiplier", $(I - DB)^{-1}$*.

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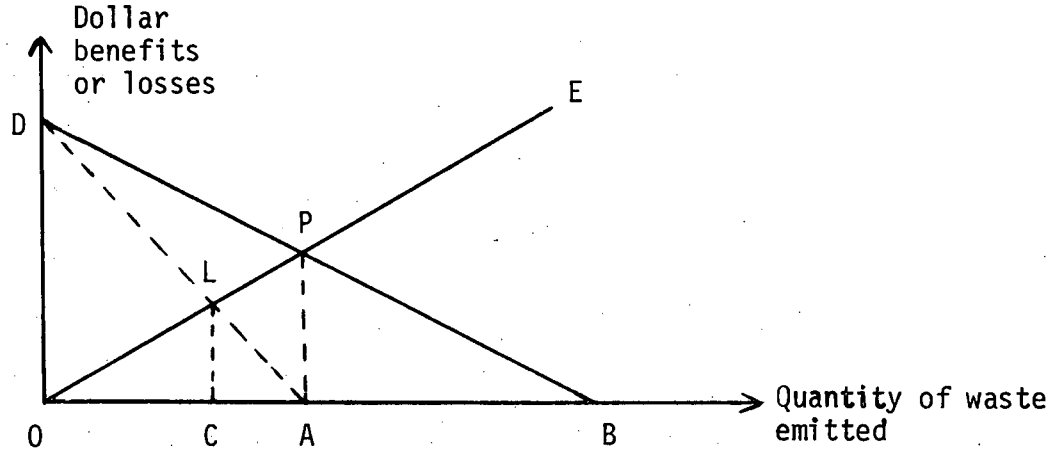
* For a more elaborate account of the various special models see 'The Input-Output Structure of the Canadian Economy 1961' VOL. 1 Statistics Canada. Cat. No. 15-501 Occasional.

D TAXING THE POLLUTER IN THE TWO-PARTY CASE

In the simple two-party case, assume that the polluter's marginal benefit schedule can be drawn with respect to the quantity of waste emitted, that his victim's marginal loss schedule can be similarly drawn and that these may be represented by DB and DE respectively as in the diagram. The optimal pollution level would be OA where the marginal net gain of the polluter is zero (i.e. net of the victim's marginal loss). Let us consider the solution in relation to this optimum in four cases;



CASE 1. If there is no possibility for bargaining between polluter and victim and there is no tax on the pollution generating activity then the resulting pollution level will be OB at which, without restraint, the polluter will maximise benefits to himself. This is clearly non-optimal since losses to the victim are not taken into account.

CASE 2. Assume no possibility for bargaining, a tax equal to marginal losses is imposed on the polluter but no compensation is paid to the victim. The pollution level will be OA. Above OA marginal losses and hence taxes will exceed marginal benefits. Below OA the opposite is true.

CASE 3. Assume that polluter and victim can bargain and a tax is imposed on marginal losses without compensating the victim.

Let DA be the polluter's marginal net gain schedule. As long as the victim's marginal loss exceeds the polluter's marginal net gain (and this occurs over the range CA), the former will have an incentive to bribe the latter to reduce the pollution level. OA will no longer be the optimum pollution level from the point of view of the victim. The solution will be at OC where marginal net gain equals the marginal loss.

CASE 4. The only difference between this case and Case 3 above is that the victim is allowed compensation amounting to the proceeds of the tax. OA now becomes the optimum pollution level since the polluter's marginal net gain and the victim's marginal net loss (or loss after compensation) both equal zero at that point.