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AGRICULTURAL PROGRAMS--

USES AND LIMITATIONS: A CANADIAN PERSPECTIVE

by

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and
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A country's agriculture is complex. The knowledge and skills of producers, environmental conditions, transportation systems and foreign markets are among the factors it involves. Agricultural programs are designed to modify its effects on societal objectives. If they are to be a success their design must be based on a thorough understanding of the complexities of the agricultural industry. Otherwise, important dimensions will be overlooked and they will fail.

Consider the following example: in 1970 the government of the Province of Manitoba in cooperation with the Government of Canada initiated plans for a program to improve the income of low income farmers. The result was Manitoba's Farm Diversification Program 1/ whose first clients were received early in 1973. This program is designed to facilitate the diversification of farmers into livestock, mainly beef production. To do so it provides: (1) grants for livestock purchase and/or the purchase and improvement of livestock buildings and equipment, (2) the extension of high risk credit, 2/ and (3) the provision of farm management advisory services through program advisors. Farmers who became Farm Diversification Program clients and expanded their beef-cow herds are now experiencing severe financial difficulty due to shortcomings of the program.

Given the international shortage of cereal grains, feed prices are extremely high. At the same time an over supply of beef has resulted in very depressed beef prices. These possibilities were overlooked and

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1/ Manitoba Department of Agriculture, Farm Diversification Program, (Winnipeg: Manitoba Department of Agriculture, 1972).

2/ Such credit is not generally available to high risk clients such as those eligible for participation in the Farm Diversification Program.

no programs to provide price supports and market stability were developed to complement the farm diversification program. Therefore, the increased costs and decreased revenues produce losses which program clients must bear.

Purpose

The three-part purpose of this paper is:

1. To develop a perspective in which public policy may be discussed.
2. To discuss the uses and limitations of agricultural programs as means to achieve public policy objectives, and
3. To suggest an approach appropriate for use in the identification and/or evaluation of agricultural program alternatives.

Public Policy in Perspective

Public policy is only required because society and societal groups have specific goals or objectives they wish to achieve. The formulation of public policy is the process of deciding which objectives are important and the relative importance of each. This is a complex process, complicated by the presence of a broad spectrum of feasible, often conflicting, objectives. Consider the set of objectives feasible for pursuit through Canadian agriculture. They are listed in Table 1. The potential conflict between the objectives listed in Table 1 is readily apparent. Price policies pursued through price support programs implemented to improve the income of low income farmers (objective 3) are likely to lead to a reallocation of resources and reduced production efficiency (objective 1). Similarly agricultural programs designed to increase the efficiency of production in agriculture are in direct conflict with the objective of maintaining on-farm employment. In addition to the complex and potentially competitive nature of agricultural policy objectives, agricultural policy and program formulation is further complicated by widely divergent views concerning the importance of specific objectives. This situation is also shown in Table 1 through the illustrative weightings attached to each by Manitoba farmers, the Manitoba Government and the Government of Canada. The Government of Canada views a favourable balance of payments, low consumer prices and production efficiency as objectives of primary importance for the agricultural industry. The Manitoba Government identifies the improvement of the income position of low income farmers a secondary federal government consideration, to be of paramount importance. At the same time the total farm population is most concerned with income to the agricultural industry and essentially indifferent to consumer food prices, balance of payments problems and the welfare of low income farmers.

Table 1
Feasible Agriculture Policy Objectives

Policy Objective	Rating of Importance*		
	Farm People	Manitoba Gov't.	Gov't. of Canada
1. Production efficiency a) crop farms b) livestock farms c) other farm types d) agricultural related industries, manufacturers, processors, distributors, and ag. services	+, -	++	+++
2. Income to agriculture	++++	+	+
3. Income to low income farm households in provincial sub-regions	+, -	++++	+
4. Agricultural employment a) crop farms b) livestock farms c) other farm types d) agricultural related industries, manufacturers, processors, distributors, and ag. services	+, -	+	+
5. Nonfarm job opportunities for farmers	-	+	+
6. Foreign balance of payments	o	o	++++
7. Price stability	++	++	+++
8. Environmental quality	+	+	+
9. Low consumer food prices	-	++	++++
10. Reduction in net government payments to agriculture	+, -	++	+++

* +, o, - is my value judgement on the relative importance of the particular goal variables to a particular group: +, important; o, neutral; -, unimportant.

Source: Adapted from J.A. MacMillan, Feasibility of Cost-Benefit Analysis for the Evaluation of Agricultural Research Projects, Proceedings of 1971 Symposia in Agricultural Research. Occasional Series No. 4, March 1973. Department of Agricultural Economics, University of Manitoba, Winnipeg.

The diverse set of feasible agricultural policy objectives is not the only complexity affecting agricultural policy formulation and program development. The industry itself is very complex and becomes increasingly so as development proceeds. Table 2 provides a simple illustration of the extent of interrelationships between agriculture and the rest of a region or nation's economy. The information presented in Table 2 is the result of an analysis conducted to determine the impact of changes in the level and distribution of a region's agricultural production on farm and urban income, urban employment and government revenue. The changes in agricultural production are those associated with production adjustments which result in maximum net income to the region's agriculture given specific adjustment constraints. The \$14.3 million agricultural production adjustment results in farm income increases of \$4.3 million. However, it also produces urban income increases of \$866 thousand, generates 161 jobs in urban places and produces \$559 thousand of increased government revenue. Such results are indicative of the extent of interactions within agriculture and between agriculture and the rest of the economy.

It is in the context of such complex policy objectives and agricultural industry interactions that programs and policies for agriculture must be contemplated, formulated and appraised. Perhaps that perspective is best illustrated as shown in Figure I. A regional or national economy functions only as a means for the achievement of societal objectives. Hence the interaction between regional or national agricultural and non-agricultural activity and societal objectives. Explicit agricultural policy specification and program identification become important only as means to modify and/or direct the functioning of an economy and thereby further the achievement of specific objectives.

It is in such a context that the uses and limitations of particular agricultural policies and programs (policy instruments) must be appraised.

Uses and Limitations of Agricultural Programs

Given the perspective identified above and its inherent complexities the uses and limitations of specific agricultural programs become apparent. A single policy instrument may facilitate the achievement of a specific policy objective but it will seldom if ever solve all the problems associated with pursuit of all societal objectives related to the agricultural industry. For example, the two-price system for wheat implemented recently in Canada may provide increased income to low income farmers producing small quantities of wheat. However, it will at the same time detract from the efficiency of agricultural production and the competitiveness of Canada as a producer of wheat for international markets. Similarly, Canada's proposed crop income stabilization program will stabilize incomes of Canadian crop producers but will do little to improve the income of low income farmers.

Table 2

Estimated Changes in the Level of Agricultural Crop and Livestock Production, Rural Incomes,^a
and Employment and Regional Urban Jobs and Income for Manitoba's Interlake Region^{b,c}

Agricultural Sector	Production		Estimated Change in Production	Income Impacts				Job Impacts ^d				Change in Government Revenue
	1971	Constrained Optimum		Farm		Urban		Farm		Urban		
				per Mil.	Total	per Mil.	Total	per Mil.	Total	per Mil.	Total	
			\$1,000.....			No.....				..\$1,000..
Agricultural Crops	18,099	21,918	3,819	313	1,195	68	260	0	0	12	46	150
Agricultural Livestock	23,308	33,748	10,441	295	3,080	58	606	0	0	11	115	409
Total	41,407	55,666	14,260		4,275		866	0	0		161	559

^aThe estimates presented in this table are indicative of the magnitude of urban impacts and further refinement is necessary before these results should be used for other than illustrative purposes.

^bRegional urban impacts are reduced due to the absence of any large urban place from the region and the region's proximity to metropolitan Winnipeg.

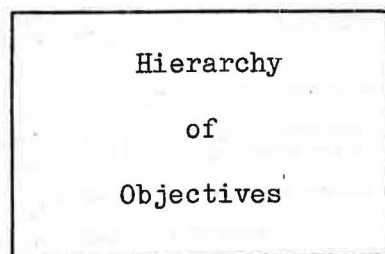
^cManitoba's Interlake Region has a farmland area of some 2.5 million acres and lies between Lake Winnipeg and Lake Manitoba. In 1968, there were 5,900 farmers in the area. The average size of farm was 175 acres.

^dIt is assumed that the effect of changes in agriculture livestock and crop production will reduce current underemployment in the industry, rather than creating new jobs.

Source: Charles P. Framingham and William J. Craddock, "Urban Implications of Regional and Interregional Efficiency in Agricultural Production," Regional Science Perspectives, Vol. 4, 1974. The Mid-Continent Regional Science Association. p. 32.

Regional & Interregional Interrelationships

Feasible Policy Objectives



Agricultural
Activity

Non-Agricultural
Activity



Agricultural Programs

1. Price Supports
2. Research & Education Programs
3. Marketing Boards
4. Consumer & Producer Cooperatives
5. Price Stabilization Programs
6. Two-price systems, etc.



Figure 1

A Dynamic Perspective for Agricultural Policies and Programs

In short, particular agriculture programs can be used for specific purposes but they must be used in conjunction with complementary instruments applicable to related objectives. 1/ As such they are useful. Their limitations lie in the relatively small subset of regional and national socio-economic interactions which they can affect.

To all this, one may reply, "All you have said is self-evident." It would seem to be so. However, if it is self-evident then why is it possible, often from cursory analysis of government expenditure records to identify expenditures whose effects are competitive relative to achievements of objectives. Furthermore, why do more professional economists not reconsider the importance of the seemingly "sacred" objectives of economic efficiency and approach Agricultural policy analysis in the refreshing manner like that employed in research reported recently by Fiorentino and Dean.

Through an econometric model of Argentina's yerba mate industry they analyze the aggregate interrelationships affecting the industry. Then they integrate this analysis, using linear programming techniques, to the impacts of farm size and capital investment on farm income of low income farmers. From this they conclude that:

the yerba mate industry provides another example of a world-wide phenomena -price policies designed to defend the agricultural sector, but which work to the disadvantage of the poor within agriculture. In addition, the government price policy in the case of yerba mate has become a mechanism for further discrimination against the poor by more powerful agricultural interests. It is concluded that changes in agricultural land holdings and production structure must form the core of any realistic attempt to deal with the small farm poverty problem. 2/

1/ A good example of the complementary use of government programs is the ten year regional development plan developed and implemented in the Interlake Region of Manitoba under a Federal Provincial Agreement between the Government of Canada and the Province of Manitoba. A summary statement of the agreement is contained in Interlake Area of Manitoba: Federal-Provincial Rural Development Agreement, published by the Department of Forestry and Rural Development, Ottawa, 1967.

2/ R. Fiorentino and G. W. Dean, "Rural Poverty and Government Intervention: The Case of the Argentina Yerba Mate Industry," American Journal of Agricultural Economics, Vol. 56, No. 4, November, 1974, pp. 751-763.

Their conclusion, translated to the context of this paper, is that defense of the agricultural industry through price policies and improvement of the income of low income farmers can only be achieved if complementary programs designed to adjust agricultural land holdings and the structure of production are implemented at the same time.

A Proposed Approach to Policy Program Evaluation

The approach employed by Fiorentino and Dean is not unlike that which we wish to propose as appropriate for the analysis and evaluation of program alternatives being considered as means for pursuing specific policy objectives. The proposed approach involves application of the framework illustrated in Figure 2.

As suggested earlier, the strength of particular programs lies in their impact on a particular dimension of regional or national socio-economic activity and their complementarity with other programs. Hence the appraisal of particular programs or the entire set of agricultural programs must consider program interactions. Secondly, one evaluation criteria is program performance. Did implementation of a particular program actually result in the planned expenditure, utilization of factor inputs, addition of specific acreages, etc.

To appraise the effectiveness of programs in achieving desired objectives the regional interrelationships and the impact of specific programs on those relationships and objectives must be understood. This can only be accomplished given (1) an approach which provides for analysis of the total socio-economic system of interactions (Aggregate analysis or Macro models) and (2) detailed analysis of the way specific programs affecting that system (detailed studies of specific programs and/or segments of the total system).

In short a logical planning and evaluation framework consists of:

1. A quantitative set of objectives.
2. Selection among a feasible set of means (programs) of achieving stated objectives.
3. Regional and/or national analysis to measure the linkage between development expenditure and specified objectives.
4. Evaluation to permit a synthesis of successes and failures in selecting the best program mix for future expenditure. 1/

1/ J.A. MacMillan, C.M. Lu and C.F. Framingham, Regional Development Planning and Evaluation: An Impact Analysis of Manitoba's Interlake Area Development Plan. Iowa State University Press. (In Press).

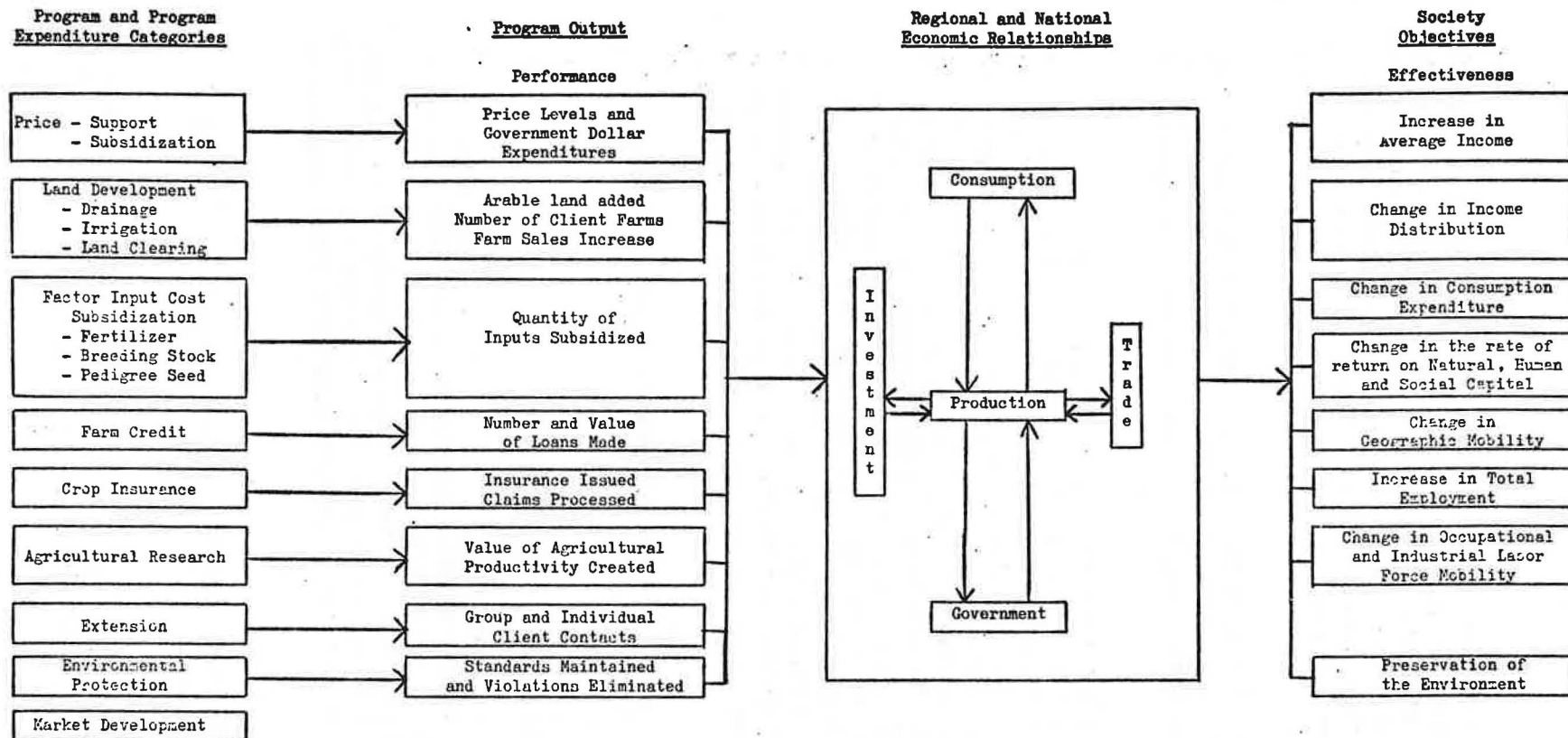


Figure 2

A Proposed Framework for the Evaluation
of Agricultural Programs

Such an approach has been applied to a Manitoba Region. An Input-Output model was employed to analyze aggregate economic interrelationships. Benefit-cost, simulation and linear programming techniques are among those employed in that region to evaluate particular programs and/or components of the economic system. Figure 3 illustrates the type of aggregate impact of program expenditures on income and employment objectives.

The conclusions of a more specific and detailed special study of a drainage program are indicative of results produced from related special studies. 1/ In that study MacMillan and Norton concluded as follows:

In calculating the cost-benefit relationship two approaches can be taken. Either the overall cost-benefit ratio over the past ten years is calculated or it is assumed that the benefits from drainage will be the same in the future as in the past.... In the case of the latter \$1.4 million is to be invested in drainage over the period 1967-77,...this indicates a relationship of 1:3. For the previous ten year period, a discounted investment of \$768 thousand at the provincial and municipal levels gives rise to a cost-benefit ratio of 1:4...almost two-thirds of the drainage benefit is obtained by 20 percent of the farmers, each having a gross revenue over \$10,000. We may conclude that drainage projects will tend to be of benefit to large higher income farms rather than their small, low income neighbours. 2/

We leave the value of such results in the appraisal of program uses and limitations to your judgment.

Implication for Developing Countries

Developing countries characteristically look to their agriculture as a principal means of pursuing their society's objectives. It is the prime source of employment for an expanding population, food to meet requirements of this population, income to improve levels of living and a generator of foreign exchange earnings. This is a natural and logical role for agriculture in a developing country since the basic ingredients

1/ Other special studies conducted in the same context are listed in the attached bibliography.

2/ G.A. Norton and J.A. MacMillan, A Framework for Economic Planning of Watershed Drainage. Research Report No. 6. (Agassiz Center for Water Studies, University of Manitoba, 1972). p. 50.

Estimated Annual Income and Jobs per \$1 Million
Regional Expansion in Crops and Livestock

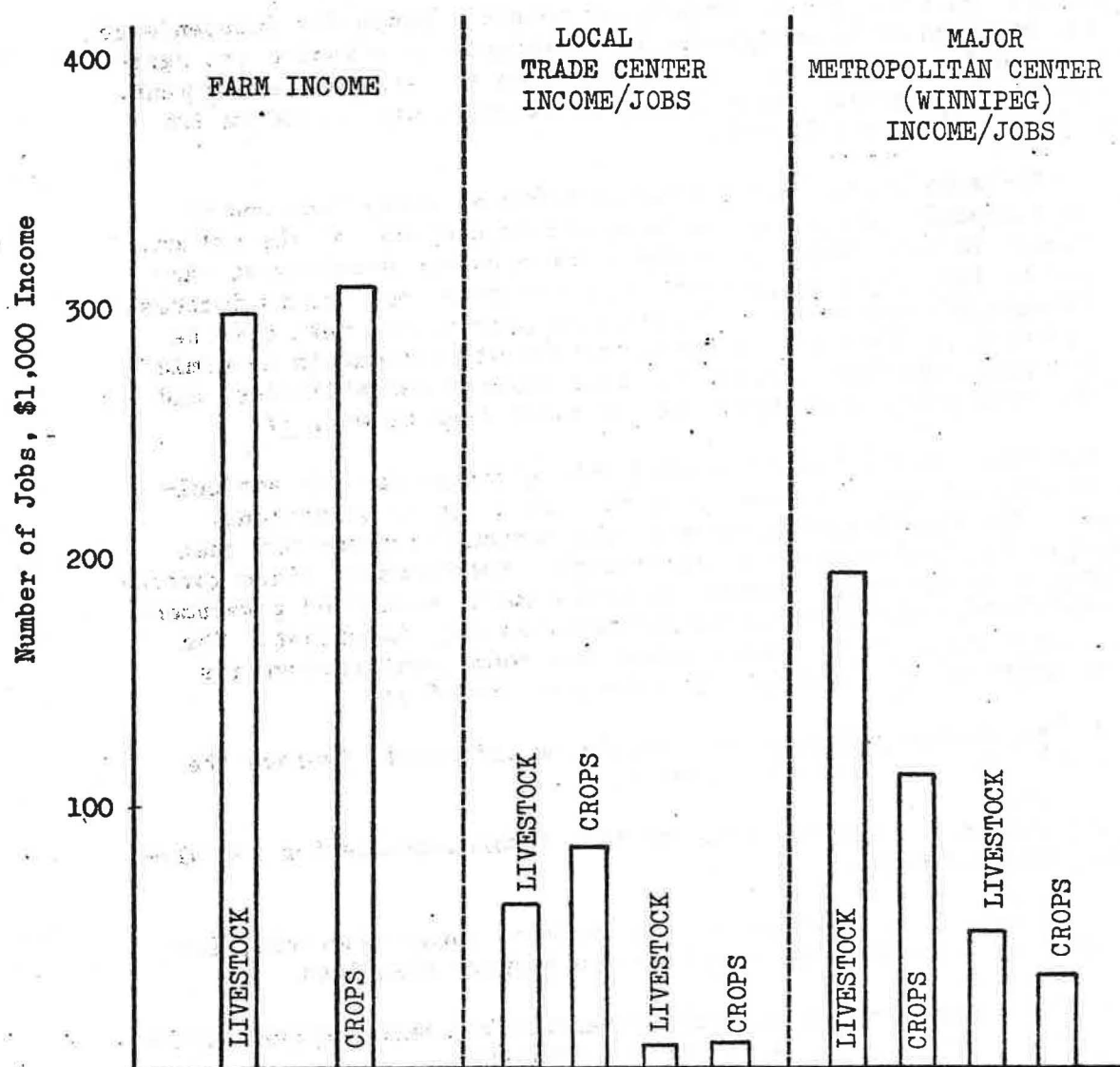


Figure 3

Estimated Annual Income and Jobs Per
\$1 Million Regional Expansion in
Crops and Livestock

Source: Derived from C.F. Framingham, J.A. MacMillan, and P.E. Nickel, Guidelines for Community Planning, Extension Bulletin No. 73-1 (Winnipeg, Manitoba: Department of Agricultural Economics, University of Manitoba, February, 1973), Table 7, p. 45.

for the development of this industry are present within most developing countries. The important task facing such countries is determination of the best possible role of agriculture as a means to reach their objectives. An example of such a country is Kenya.

Kenya, an East African developing country, since its independence in 1963, embarked on a development plan designed to organize its agriculture in order to maximize its contribution to national development. The overall strategy for agricultural development was stated in its second 5-year plan as follows:

It is to involve the people of Kenya at every step and to an increasing extent in the economic development of the nation. Viewed in this light, a strategy for economic development cannot be judged solely in terms of production, per capita incomes, balance of payments and the level of prices, but must also be assessed in terms of the participation of citizens in economic activity, the improvements of their talents and abilities, and the equitable distribution of the gains from growth. 1/

The government of Kenya adopted this strategy for its agricultural development and implemented it through a series of national programs. The significant feature of the various programs was that they had an integrated project orientation. Furthermore, since government is such an important element in development, sustained governmental commitment to agricultural development was very important. The government of Kenya amply demonstrated this commitment through its total support for agriculture. It committed itself to:

1. Government policies to directly or indirectly improve the price and income incentives of farmers.
2. Planning the development process simultaneously for formulation and implementation.
3. Planning that related to the nation's total resources, its administrative capacity with commitment to support the plans.
4. Planning based on economic potential and well designed individual projects pre-tested as to their feasibility.
5. Planning that placed high priority on the existence of responsible agencies capable of and involved with the formulation and implementation of the programs.

1/ Republic of Kenya, Development Plan, 1966-70, p. 56.

The foregoing criteria which, in practice, demonstrated a holistic approach to development can be seen in the overall agricultural development process and in specific sectors of Kenya's agriculture. The earliest and very important program for Kenya was the "Million Acre" scheme. This involved the transfer of one million acres of European owned large scale highland farms for restructuring and settlement by Africans. This required the creation of a total order of services that started with the breaking up of the large land holdings into appropriate sized farms for the new African farmers, through the provision of agricultural, educational and extension services. It was also necessary to establish facilities to supply long and short term credit to finance the new farmers in their production operations.

Associated with the primary production aspects of the development program was a system of national farms operated under expert direction to insure the maintenance and distribution of an adequate supply of high quality seeds and livestock for use by the new farmers.

The establishment of the coordinated program for settlement and production on the "Million Acre" project could not have succeeded without the organization of a handling and marketing system to efficiently dispose of the surplus products flowing from these farms. Thus it was appropriate that a system of handling and marketing services be available within the country. In this respect Kenya was well advanced for a developing country. The European farmers had created a system of producer marketing boards for the major crops. These boards were basically cooperatives, administered by the farmer members during the colonial period. After Kenya's independence they became vehicles for the marketing of the produce flowing from the new African farms. It required some adjustment, primarily in the form of Africanizing the Boards of Directors of each marketing board and injecting some government representation. The latter was considered necessary to safeguard the public interest in the matter of guaranteed prices to farmers and in the interest of efficient marketing.

The essential point of the Kenyan experience is that the country's new agriculture would have floundered if the total system of services for the development of the new order of African farms had not been structured as a coordinated, holistic system. Kenya was better situated to adopt such a system because it had a well developed agriculture in the highlands and a highly trained African civil service in its agriculture ministry. A developing country lacking such elements in its socio-government structure would do well to proceed to recruit technical assistance and financial aid so as to create a cadre of personnel that will and can organize its agricultural development to the end that its objectives will be realized to the maximum extent possible.

Conclusion

In conclusion we submit that:

1. The usefulness of particular programs or policy instruments lies in their effectiveness in stimulating specific aspects of regional and/or national interrelationships and their complementarity with other programs in effect and/or with implementation potential,
2. The limitations of all programs are their inability to function effectively in isolation, and
3. That adequate appraisal of programs and program alternatives requires an aggregate analysis and understanding of the region's (nation's) economy, and specific program analysis integrated with and complementary to that aggregate analysis.

A SELECTED BIBLIOGRAPHY OF RELATED RESEARCH

A. Development Effectiveness Selected
References on the Interlake FRED Evaluation

James A. MacMillan, and C.F. Framingham, eds. Seminar on the Evaluation of the Interlake Area Development Plan, Occasional Series No. 1. (Winnipeg, Manitoba: Department of Agricultural Economics, University of Manitoba, 1969), 81 pp.

_____. "Feasibility of Cost-Benefit Analysis for the Evaluation of Agricultural Research Projects," Symposium on Agricultural Research, sponsored by the Department of Agricultural Economics, University of Manitoba, March 1972.

C.F. Framingham, James A. MacMillan, and P. Nickel, Guidelines for Community Planning, Extension Bulletin No. 73-1 (Winnipeg, Manitoba: Department of Agricultural Economics, University of Manitoba, 1973), 63 pp.

James A. MacMillan, "Evaluation of Resource Development Programs: A Regional Application of Planning, Programming and Budgeting, Benefit/Cost and Systems Analysis," (chapter submitted for Agassiz Center for Water Studies, Book on Water Resources Research), 1974.

Raymond D. Bollman, and James A. MacMillan, Income Expenditure Relationships and Level of Living in the Interlake Area of Manitoba, Research Bulletin No. 72-2 (Winnipeg, Manitoba: Department of Agricultural Economics, University of Manitoba, 1972), 96 pp.

B. Regional Economic Relationships

Jerald R. Barnard, James A. MacMillan, and Wilbur R. Maki, "Evaluation Models for Regional Development Planning," Regional Science Association Papers, 23:117-140, 1969.

Wilbur R. Maki, and James A. MacMillan, Regional Systems for Development Planning in Manitoba, Research Bulletin No. 70-1 (Winnipeg, Manitoba: Department of Agricultural Economics, University of Manitoba, 1970), 98 pp.

_____, Chang-mei Lu and C.F. Framingham, Regional Development Planning and Evaluation: An Impact Analysis of Manitoba's Interlake Area Development Plan. (Book Manuscript under publication review).

C.F. Framingham, and James A. MacMillan, "Estimation of Subregional Statistics for Regional Development Planning," Regional Science Perspectives, Vol. 2, No. 1, 1972.

_____, James A. MacMillan, and D.J. Sandell, The Interlake Fact, distributed by the Manitoba Planning and Priorities Committee of Cabinet (Winnipeg, Manitoba: Hignell Printing Ltd., 1970), 700 pp. and Interlake Fact Income Data Supplement, 52 pp.

James A. MacMillan, Fu-lai Tung, and R.M.A. Loyns, "Differences in Regional Household Expenditure Patterns by Urbanization: A Cross-Section Analysis," Journal of Regional Science, 12, No. 3, December, 1972.

_____. "A Framework for Simulation of Area Economic Growth with Urban Consolidation," Regional Science Perspectives, 1:121-143, No. 1, 1971.

_____, and Chang-mei Lu, Projection and Impact Models: Area Manpower Planning in the Interlake Region, Manitoba, Research Bulletin No. 72-5 (Winnipeg, Manitoba: Department of Agricultural Economics, University of Manitoba, 1972), 141 pp.

_____, and Chang-mei Lu, Urban Impacts of Rural Resource Development Expenditures, Research Report No. 7 (Winnipeg, Manitoba: Agassiz Center for Water Studies, University of Manitoba, 1973), 80 pp.

_____, C.F. Framingham, and F.L. Tung, "A Proposed Simulation Method for Measuring Structural Change and Rural Development Program Impacts," Canadian Journal of Agricultural Economics, Vol. 22, No. 2, July, 1974 (forthcoming).

_____, F. L. Tung, and J. R. Tulloch, "Migration Analysis and Farm Number Projection Models: A Synthesis," American Journal of Agricultural Economics, Vol. 56, No. 3, August, 1974.

Wilbur R. Maki, C.F. Framingham, and D.J. Sandell, Population Projections for Manitoba by Region and Town Size--Some Alternatives, 1971-1990, Research Bulletin No. 73-2 (Winnipeg, Manitoba: Department of Agricultural Economics, University of Manitoba, September, 1973).

C.F. Framingham and W. J. Craddock, "Urban Implications of Regional and Interregional Efficiency in Agricultural Production" Accepted for publication in Regional Science Perspectives, 1974.

C. Program Evaluations

G.A. Norton, and James A. MacMillan, "Maintenance and Reconstruction Costs and Benefits: A Watershed Analysis," Canadian Journal of Agricultural Economics, 18:56-63, No. 3, November, 1970.

- G.A. Norton, and James A. MacMillan, A Framework for Economic Planning of Watershed Drainage, Research Report (Winnipeg, Manitoba: Agassiz Center for Water Studies, University of Manitoba, 1972).
- Philip G. Douglas, and James A. MacMillan, Simulation of Economic Impacts of Highway Expenditures, Research Report No. 9 (Winnipeg, Manitoba: Center for Transportation Studies, University of Manitoba), 1972, 96 pp.
- James A. MacMillan, Leo A. Bernat, and John J. Flagler, Benefits and Costs of Manpower Services in the Interlake Rural Development Area, Research Bulletin No. 72-1 (Winnipeg, Manitoba: Department of Agricultural Economics, University of Manitoba, 1972).
- Paul Molgat, and James A. MacMillan, Education in Area Economic Development, Research Bulletin (Winnipeg, Manitoba: Center for Settlement Studies, University of Manitoba, 1972), 102 pp.
- N.A. Blase, James A. MacMillan, and F.L. Tung, Simulation of Local Government Performance, Revenue and Expenditure Alternatives, Research Bulletin No. 73-1 (Winnipeg, Manitoba: Department of Agricultural Economics, University of Manitoba, 1973), 99 pp.
- S.N. Pareek, Benefits and Costs of Land Clearing in the Interlake Area of Manitoba, unpublished Master's Thesis, Department of Agricultural Economics, University of Manitoba, 1972.
- B. Friesen, The Interlake Land Acquisition Program: An Analysis of the Benefits and Costs, unpublished Master's Practicum, Natural Resource Institute, University of Manitoba, 1974.
- R.J. Hordo, and James A. MacMillan, "A Systems Analysis of Development Plan Management in the Interlake Region of Manitoba." Draft journal paper under review.
- J. Craven, C.F. Framingham, and R.E. Capel, "A Proposed Model for Evaluating Recreation Impacts." Paper presented to the Mid-Continent Regional Science Association, February, 1974.
- G.S. Gislason, James A. MacMillan, and N.J.R. Ward, "An Overview of the Manitoba Freshwater Fishery" Draft Report to Fisheries and Marine Branch, Canada Department of Environment, 1974.
- James A. MacMillan and E. Nickel, "An Economic Appraisal of Urban Housing Assistance Rental Supplements versus Public Housing," Canadian Public Administration, 1974 (forthcoming).