

PH 11/1/81
12:40:58

REPORT OF AN INTERNSHIP
TRAINING PROGRAM ON
IMPACT ASSESSMENT OF
DEVELOPMENT PROJECTS*

BY BRUCE KOPPEL

WCR-81-2

EAST-WEST RESOURCE SYSTEMS INSTITUTE
EAST-WEST CENTER
1777 EAST-WEST ROAD
HONOLULU, HAWAII 96848, USA

DECEMBER 1981

*REPORT ON MODULES I-IV OF AN INTERNSHIP TRAINING PROGRAM
HELD IN HONOLULU, HAWAII AT THE EAST-WEST CENTER RESOURCE SYSTEMS
INSTITUTE SEPTEMBER 21-DECEMBER 11, 1981.

**BRUCE KOPPEL IS THE FOOD SYSTEMS PROGRAM LEADER AT THE
EAST-WEST CENTER RESOURCE SYSTEMS INSTITUTE AND COORDINATED
MODULES I-IV OF THE IMPACT ASSESSMENT INTERNSHIP TRAINING PROGRAM.

The first step to understanding of men is the bringing to consciousness of the model or models that dominate and penetrate their thought and action. Like all attempts to make men aware of the categories in which they think, it is a difficult and sometimes painful activity, likely to produce deeply disquieting results. The second task is to analyse the model itself, and this commits the analyst to accepting or modifying or rejecting it, and in the last case, to providing a more adequate one in its stead.

Isaiah Berlin,
Philosophy, Politics and Society, 1962, p. vii.

TABLE OF CONTENTS

Introduction to the Report.....1

Acknowledgements.....3

Summary Description of the Impact
Assessment Internship Program.....6

Schedule.....14

List of Participants.....21

Reading List.....23

Resource Persons.....27

Special Guest Resource Persons.....30

APPENDICES: Impact Assessment Field
Application Proposals

INTRODUCTION TO THE REPORT

This is a report on Modules I-IV of an Impact Assessment Internship Training Program implemented by the East-West Center Resource Systems Institute September 21 to December 11, 1981. The program was developed in close cooperation with two Philippine projects, the Economic and Social Impact Analysis/Women in Development (ESIA/WID) project and the National Economic and Development Authority (NEDA)-UNDP/IBRD Regional Planning Project. The program was funded by a grant from USAID through the ESIA/WID project. The training program was conceived as part of an effort to enhance the capacity of government personnel to recognize broader social, economic and environmental impacts of projects. It is believed that enhanced recognition of broader impacts will improve the relationship between project design and the achievement of national and regional development objectives. The 14 participants in the internship program, therefore, are all Philippine government officials.

Impact analysis doesn't replace the usual forms of financial and economic analysis that normally accompany project development. Impact analysis builds on and goes beyond those forms of analysis, however, by asking questions such as: What differences does a project make in the area influenced by the project? What are the project's indirect as well as direct effects? What, if any, are the project's unintended as well as intended effects? If we see a certain impact sequence for a project in one situation, under what conditions can we expect a similar project to yield the same sequence of impacts in another situation? The "outputs" of a project (a road, an irrigation canal) are the beginning for impact analysis: What difference did the road or

the irrigation canal make? To whom? In what ways?

Impact analysis is not a set of techniques, but rather a set of logics about the attribution of cause and effect in directed socioeconomic change. That was and remains our essential premise for the internship training program. In Module 5, a field application in the Philippines, logics discussed in Honolulu will be put to practice. The resulting praxis will hopefully represent an important step for the Philippines in expanding visions of what projects do.

ACKNOWLEDGEMENTS

Intensive training programs require considerable cooperation from resource people. That is true for topic areas that are essentially technical and codified. Impact analysis is only partly technical and only slightly codified. Consequently, planning and implementing intensive educational programming demands more preparation and requires greater cooperation from resource persons. I want to thank All the people who helped make this program possible. In the Philippines, where it all began and where it all comes to fruition, I particularly want to acknowledge the roles of Florian Albuero, Romeo Reyes and Jose Lawas. Each of these gentlemen contributed in numerous ways to specifying what the Philippines needed from the program and how the program could best be shaped to meet those needs. Especially noteworthy is the role of Florian Albuero, manager of the ESIA/WID project micro-component. It was under the auspices of that component that the training program was developed. Dr. Albuero's dedication and commitment are exemplary.

At the East-West Center, a small group began a year ago to discuss the why's, what's and how's of an impact assessment training program, always with heroic acceptance of the task about to be engaged. I especially want to thank Robert Randolph, Chuck Schlegel, Jim Roumasset, Eddie Ng, and Shelly Mark for the contributions they made at that crucial early point.

Modules I-IV were supported by a grant from USAID through the ESIA/WID project. I want to give special thanks to two persons who made administration of the grant as smooth an experience as one could ever desire. I refer to Roy Murimoto, director of USAID's Office of

International Training at the University of Hawaii and Asa Higuchi, the East-West Center's Contracts and Grants Officer. Both men were never anything but facilitative. Mahalo to them both.

Administrative and logistical support for a long training program are the submerged part of the iceberg. While resource persons and participants work above the surface, a small army works behind the scenes to keep the copier running, papers typed, participants fed and a host of other functions which are the basic metabolism of a training program. Special thanks go to Lorna Emdy, Naoe Ishii, Jeni Miyasaki, Lilian Shimoda, and Ann Takayesu. In this context I want to especially acknowledge the very important role of Ms. Kajorn Howard. Stated simply and directly, the program would not have happened without the numerous and diverse contributions made by Ms. Howard. She was simultaneously den mother to the participants and general of the army that kept the program breathing.

All the resource persons did more than we asked, but always in the directions we requested. I say that thankfully because often the use of resource persons in a complex training program can break the thread that holds the program's parts together. Our resource persons worked hard and shared the enthusiasm which the program quickly generated.

The final and most important acknowledgement is reserved for the participants. Motivated, patient, humorous, inquisitive,--they were as good a group as one could find. They also quickly developed into a close social group, reinforcing each other through the ups and downs individual participants had in the program. When a wave of personal tragedies struck the group, they held together, carrying the hurt

through their crises with a bayanihan spirit that those of us connected with the group will not soon forget. We all learned together, and for that opportunity I thank the participants.

Bruce Koppel
Training Program Coordinator
December 28, 1981

SUMMARY DESCRIPTION OF THE IMPACT ASSESSMENT INTERNSHIP PROGRAM

Introduction

In April, 1980, the East-West Center Resource Systems Institute (RSI), in cooperation with the Ford Foundation and the National Statistical Office of Thailand, sponsored a workshop on "territorial Indicators for Development". For RSI, the workshop was a product of two related institute concerns: (1) understanding better the consequences of alternate strategies to develop and manage key resource systems such as food and energy; and (2) enhancing capacities to translate improved understanding of those systems to practical policy and project measures. As an outgrowth of discussions initiated at the workshop between RSI and the team representing the Philippines, an internship program on impact analysis of development projects was proposed, designed, and funded.

The program is relatively unique in several respects. First, it is not a training program which was first established and then searched for participants. It is, instead, a carefully designed component of two ongoing Philippine projects which together are attempting to improve project development capabilities at national and regional levels within the Government of the Philippines. The two projects are the "Economic and Social Impact Analysis/Women in Development" (ESIA/WID) project supported by the U.S. Agency for International Development and the National Economic and Development Authority (NEDA)-United Nations Development Program(UNDP)/World Bank (IBRD) Regional Planning Project. The ESIA/WID project is essentially a research project working with a number of national agencies and seek-

ing to develop and institutionalize a broader impact indicator system into the project development cycles of those and ultimately other agencies. The NEDA-UNDP/IBRD project is focusing on improving the capacities of NEDA, the Philippine planning agency, to effectively function in the regions through improved planning and project development capabilities. In effect, the Government of the Philippines, having taken these steps to improve its project development capabilities, was able through the ESIA/WID and NEDA-UNDP/IBRD projects, to define the needs for and objectives of a training exercise in impact assessment. This context helps explain the importance and necessity of extensive collaborative planning in designing the program, developing participant selection criteria, and defining utilization procedures.

A second relatively unique aspect of the program is that there are both in-country and out-of-country components. Normally, the major in-country component of a foreign training program is an "echo" seminar, an opportunity for participants to pass along what they learned abroad. In this case, participants will spend several months implementing impact assessments they designed in Honolulu on projects their agencies selected for the exercise. After that experience, the curriculum provided in Honolulu will be reinforced and reinterpreted as appropriate and new material introduced. An echo function is present, but it is continuing and essentially activist, namely doing and adapting, rather than passing along basically unmediated knowledge.

A third aspect of the program that we believe makes it relatively unique is that it is not proceeding on the assumption that a complete and codified body of knowledge exists and can be "passed along" relatively intact. It was and is our view that impact assessment is not

at that stage of development. We have instead opted for focusing on logics of evaluation and how those logics are reflected in methodological and analytic strategies and choices. Our main concern, however, is utilizeability. We believe that flexibility firmly grounded in the logic of impact analysis is the best path to that end.

It is in that sense that the program seeks to transmit techniques of project evaluation and impact analysis to government practitioners. The specific techniques chosen and the basic approach providing the context for those techniques are provided by the terms of reference of the ESIA/WID project. That project has sought to go beyond conventional cost-benefit analyses and the counting of project outputs. It seeks, instead, a broader analysis of the impacts projects have on socioeconomic and resource systems within their influence area and how the dynamics of those systems, in turn, shape the actual direct and indirect effects of projects.

The internship program was conceived to improve project development capabilities, with special emphasis on the ex post and ultimately ex ante use of project impact analyses, of a core set of individuals from national and regional offices of the Philippine Government. Fourteen individuals, the product of a carefully designed and executed selection process, were identified for participation in the program. NEDA's central office has two participants while the Regional NEDA offices have seven participants. Other agencies, represented by one participant each, are: the Commission on Population (Region VII Office), the Davao City Waterworks Commission, the Ministry Of Health (Region VI Office), the Ministry of Local Government and the Philippine Port Authority (Region IX Office). Thus 11 of the 14 partici-

pants are from the regions. The participants are expected to initiate the formation of a critical mass of government personnel who can adequately understand, appreciate and actually conduct impact analyses of development projects as well as use impact analyses to improve project identification and design. Finally, it should be noted that the program was developed in full cognizance of the evolving system of planning-budgeting linkages both at national and regional levels in the Philippines. It is that evolving system in conjunction with the ESIA/WID and NEDA-UNDP/IBRD projects that constitutes the ultimate utilization context for the training program.

Training Design

The internship program is designed along a sequence of five modules which are described below. Four of the modules were implemented in Honolulu by the East-West Center Resource Systems Institute and are summarized in this report. The fifth module is organized around a field application activity in the Philippines. The structure and pace of the four modules implemented in Honolulu was intensive with considerable employment of individual and group exercises, a heavy reading load, and lectures from a staff that included resource persons from the United States, the Philippines, India, Malaysia, Pakistan and Singapore.

Training Modules

The five modules are as follows:

1. Evaluation, Monitoring and Impact Analysis: Overview, Review and Prologue. The major objective of this module was to ensure that all the interns have an adequate and critical perspective on several major themes in impact analysis research. The themes are:

- a. Monitoring, Evaluation, and Explanation: What are these? How do they Differ?
- b. Organizational issues in Evaluation, Monitoring and Impact Analysis: What does it take to execute different kinds of evaluations?
- c. User issues. What are different end uses of evaluation, monitoring and impact analyses? How can ends and means in impact research be associated more constructively?

2. Special Issues in evaluation Design and Analysis.

The objective of this module was to familiarize the interns with major issues and strategies in the logic of evaluation research design and analysis. The basic questions the module addressed are: What do we need to know? What does that mean and what doesn't that mean in terms of data collection and analysis decisions? Topics covered include ideas about causality and attribution and how they relate to different types of evaluation; inference issues in evaluation and how those issues are reflected in approaches to construct, internal and external validity, and ultimately, research design and data analysis strategies. Special technical attention was given to cross-tabular data analysis with emphasis on the introduction of third variables to bivariate relationships. Introduction of third variables permits dis-

cussion of the existence and role of intervening, antecedent, and extraneous variables and provides an accessible way to measure the relative effects of different independent variables.

3. Special Issues in Indicator Research

The objective of this module was to sensitize the interns to alternate ways of conceiving, measuring and interpreting selected crucial indicators. The areas of concern chosen for discussion are drawn directly from those defined by the ESIA/WID project. They are: income, income distribution, production/productivity, employment, population/fertility, environmental quality, energy, participation rates, health/nutrition, and education/literacy. It should be noted that each of these areas of concern are described in the Philippine National Plan as major socioeconomic goals. The module took each area of concern and briefly but intensively explored and evaluated alternate approaches to conceptualization and measurement.

4. Planning an Impact Assessment of a Development Project.

The major objective of this module was to encourage the interns to think comprehensively about the process by which a project ultimately impacts critical areas of economic and social concern. Doing that implies an understanding of conceptual issues and "models" of intervention in socioeconomic systems. By asking the interns to design an impact assessment of a specific project, thought needs to be extended to how those concepts and "models" about project impact analysis can be clarified through an empirical exercise. The interns were asked to design an impact analysis of a specific development pro-

ject for implementation in approximately 6 weeks once they return to the Philippines. Through an iterative process, the interns were assisted in conceptualizing how a specific project impacts and is impacted by the socioeconomic system in a defined project influence area. The proposals generated by the interns reveal their perception of the "model" defining the impact sequence from project to socioeconomic effects. The proposals also contain explicit hypotheses drawn from the "model", a strategy for making variables operational within the time and resource constraints faced, and an indication of precisely how data acquired will be analyzed to test hypotheses, identify relationships, and attribute impacts.

5. Incorporating Impact Assessment into Agency Operations

This module begins with the implementation of the impact assessment proposal developed in module four. Technical assistance from the ESIA/WID project is provided to help interns over humps that might otherwise not be overcome and to ensure a continuation of agency support for the exercise. A workshop to be held approximately six weeks after the initiation of field research will review concepts, methods and strategies discussed in Honolulu in the light of the interns' field experience possibly yielding some reinterpretation of preliminary conclusions drawn in Honolulu. Special attention will be given to (1) ex ante uses of impact analysis data for project identification and prioritization, and (2) extensions of project impact analysis to regional development monitoring formats. In addition, new content will be introduced to help accelerate the linkage of impact assessment capability to specific agency needs. Finally, attention will be given

to how the training and research experience of the interns can best be used as a foundation for extending impact assessment skills to other individuals and agencies.

SCHEDULE

IMPACT ASSESSMENT INTERNSHIP PROGRAM

September 21-December 11, 1981

<u>WEEK</u>	<u>DATE</u>	<u>TOPIC</u>	<u>RESOURCE PERSON(S)</u>	
1	September 21	Opening and Terms of Reference for the Program	Koppel, Reyes	
		Planning and Evaluation: Linkages in Theory and Practice	Mark	
	September 22	Participants describe agency missions and existing monitoring and evaluation systems		
	September 23	(A.M.):	"	
		(P.M.):	Impact Research in the ESIA/WID Project	Reyes
	September 24	Special Symposium: Planning, Budgeting and Assessment in the State of Hawaii	Mark, Skrivanek, Schwind, Crothers, Nekonishi, Joun, Tajima, Marcus, Fujimoto, Lowry	
September 25		Participants continue descriptions of agency missions and existing monitoring and evaluation systems		
		Introduction to Project Management Case Studies	Goodman	

2	September 28	The Galileo Method: Impact Assessment on Molaka'i	Canan	
		Project Development and Regional Planning in the Philippines (PDRP) I	Umadhay	
	September 29	Case History: Malia Coast Comprehensive Health Center	Miyabara	
		PDRP II	Umadhay	

<u>WEEK</u>	<u>DATE</u>	<u>TOPIC</u>	<u>RESOURCE PERSON(S)</u>
2	September 30	Case History: Hawaii Geothermal	Miyabara, Goodman
		PDRP III	Umadhay
	October 1	Case History: Small Hydroelectric Project in China	Hawkins
		Case Histories: Summary Session	Miyabara, Goodman, Hawkins
	October 2	Evaluation of Complex Programs: the Hawaii Bilingual Education Program	Enoki, Ishitani
Cost-Benefit Analysis: State of the Art		Hufschmidt	

3	October 5	Special Symposium: Critical Issues on World Food and Agriculture	Oasa, Collins, Friedland, Hawes, Kerkvliet, Stauffer, Taussig, Burbach, Flynn, Payer, Miyabara, Jennings
	October 6	"	
	October 7	"	
	October 8	"	
	October 9	Using Evaluation Data for Improved Project Design: Irrigation in the Philippines	Siy
		Planning and Evaluation in the Philippines I	Sevilla

<u>WEEK</u>	<u>DATE</u>	<u>TOPIC</u>	<u>RESOURCE PERSON(S)</u>
4	October 12	HOLIDAY	
	October 13	Types of Evaluation	Koppel
		Planning and Evaluation in the Philippines II	Sevilla
	October 14	Internal Validity	Koppel
		Planning and Evaluation in the Philippines III	Sevilla
	October 15	External Validity and Construct Validity	Koppel
	October 16	External Validity and Generalizing Evaluation Results	Koppel
		Designing Evaluation and Monitoring Systems for Complex Projects: the Hawaii Compensatory Education Program	Enoki, Ishitani

5	October 19	The Logic of Evaluation Research Design	Koppel
	October 20	Quasi-Experimental Designs	Koppel
	October 21	Introduction to Cross-Tabular Analysis: Reading Tables	Koppel
	October 22	The Use of Socio-Economic Indicators in Development Planning	Yeh
		Social Indicators: Issues and Applications	Beal

<u>WEEK</u>	<u>DATE</u>	<u>TOPIC</u>	<u>RESOURCE PERSON(S)</u>
5	October 23	Social Indicators: What are They? What aren't They?	Schlegel
		Types of Indicators	Schlegel
<hr/>			
6	October 26	Data Sources: Primary	Koppel
		Data Sources: Secondary	Schlegel
	October 27	Indices: Construction and Interpretation	Schlegel
		Scaling Techniques	Schlegel
	October 28	Validity and Validation	Schlegel
	October 29	Indicators of Agricultural Production and Productivity	Ahmed
		Indicators of Employment and Productivity in Small and Medium Enterprises	Morse
	October 30	The Effects of New Infrastructure on Income, Employment, Wages, and Income Distribution	Roumasset
		Welfare, Equity, and Equality	Canan
<hr/>			
7	November 2	Energy and the Impact of Man on the Environment	Rambo
		Human Interaction with the Ecosystem: The Case of Settlement Schemes in Malaysia	Talib
	November 3	Energy: Concepts and Applications in Rural Areas	Santerre
		Field Trip: Health Considerations in the Use of Traditional Fuels	Ramakrishna, Menon

<u>WEEK</u>	<u>DATE</u>	<u>TOPIC</u>	<u>RESOURCE PERSON(S)</u>
8	November 4	Demographic Indicators and Program Evaluation	Smith
		Public Health: Anti-Smoking Campaigns and Public Response in California	Randolph
	November 5	Human Nutrition	Yang
		Education and Literacy	Green
	November 6	The Logic of Cross-Tabular Analysis: Introducing Third Variables into Bivariate Relationships	Koppel

9	November 9	"	Koppel
	November 10	"	Koppel
	November 11	Health Research in the ESIA/WID Project	Guerrero
	November 12	"	Guerrero
	November 13	"	Guerrero
		Exercises in Cross-Tabular Analysis	Koppel

10	November 16	Research on Rural Roads in the ESIA/WID Project	Carino
	November 17	"	Carino
	November 18	"	Carino
	November 19	The Logic of Cross-Tabular Analysis: Extensions to Other Forms of Multivariate Analysis	Koppel
	November 20	Free for preparation of iteration one field application proposals	

<u>WEEK</u>	<u>DATE</u>	<u>TOPIC</u>	<u>RESOURCE PERSON(S)</u>
11	November 23	ITERATION ONE: Presentation of First Versions of Field Application Proposals by Participants. Presentations followed by extensive discussion.	
	November 24	"	
	November 25	"	
	November 26	HOLIDAY	
	November 27	Iteration One continued.	

12	November 30	ITERATION TWO: Presentation of revised versions of Field Application Proposals by Participants in Individualized Sessions with Program Resource Staff.	Koppel, Alburo
	December 1	"	
	December 2	"	
	December 3	"	
	December 4	Free for preparation of iteration three field application proposals	

13	December 7	ITERATION THREE: Presentation of revised versions of Field Application Proposals. 15 Minute Presentation followed by assigned discussant and group reactions.	
	December 8	"	
	December 9	"	
		Doing and Using Project Evaluations: A Perspective from AID	Johnson

<u>WEEK</u>	<u>DATE</u>	<u>TOPIC</u>	<u>RESOURCE PERSON(S)</u>
13	December 10	Doing and Using Project Evaluations: A Perspective From AID	Johnson
		The Role of Impact Analysis in Regional Monitoring Systems	Koppel
	December 11	SEND-OFF FOR FIELD APPLICATION AND MODULE 5	

IMPACT ASSESSMENT INTERNSHIP PROGRAM

LIST OF PARTICIPANTS

Miss Mercedita C. Agcaoili Senior Economic Development Specialist Agriculture Staff Programs and Projects Office National Economic and Development Authority	Mr. Diamadel Dumagay Economic Development Specialist National Economic and Development Authority Region XII Cotabato City
Mr. Herbert T. Barrios Economic Development Specialist National Economic and Development Authority Region III San Fernando, Pampanga	Mr. Fernando C. Fajardo Senior Economic Development Specialist National Economic and Development Authority Region X Cagayan de Oro City
Miss Filomena Conti Economic Development Researcher National Economic and Development Authority Region XI Davao City	Mrs. Elma de Vera Garcia Senior Economist Rural Roads Program Ministry of Local Government
Miss Thelma M. Cruz Economic Development Specialist Social Services Staff Programs and Projects Office National Economic and Development Authority	Mr. Danilo L. Gil Chief, Commercial Division Davao City Water District Davao City
Mr. Ramon Peres Economic Development Specialist National Economic and Development Authority Region IX Zamboanga City	Mrs. Concepcion N. Mancilla Planning Officer II Regional Health Office Region VI Ministry of Health Iloilo City
	Miss Sandra Manuel Research Evaluation Coordinator Region VII Commission on Population Cebu City

Mr. Nicholas B. Rivas, Jr.
Economic Development Specialist
Infrastructure Sector
National Economic and
Development Authority
Region VI
Iloilo City

Miss Beda Tumamos
Junior Statistician
Philippine Ports Authority
Cagayan de Oro Port
Management Unit
Cagayan de Oro City

Mr. Alexander Q. Valenciano
Economic Development
Specialist
National Economic and
Development Authority
Region VI
Iloilo City

READING LIST

Impact Assessment Internship Program

Modules I-IV

- Briscoe, John. "Energy Use and Social Structure in a Bangladesh Village". Population and Development Review (1979): 615-641.
- Brown, Dorris D. Agricultural Development in India's Districts. Cambridge, Mass.: Harvard University Press, 1971.
- Byrnes, Kerry J. and Jaleh Shadi-Talab. A Methodology for Indicators of Social Development. Supplementary Report 3: The Small Farmer Agricultural Sector. Iowa State University. Department of Sociology and Anthropology. Sociological Studies in Social Indicators. Sociology Report No. 127. Ames, Iowa. 1976.
- Canan, Penelope, et. al. Moloka'i Data Book: Community Values and Energy Development. Executive Summary. Honolulu: UNiversity of Hawaii. Urban and Regional Planning Program. 1981.
- Carino, Ledivina. Framework for Analyzing the Impacts of a Rural Road Project. Paper prepared for the training program.
- Cohen, John M. "Rural Change in Ethiopia: The Chilalo Agricultural Development Unit". Economic Development and Cultural Change (1974): 580-614.
- Cummings, Jr., Ralph W. Minimum Information Systems for Agricultural Development in Low-Income Countries. The Agricultural Development Council. Seminar Report No. 14. New York. 1977.
- Farm and Home Development Office. College of Agriculture. University of the Philippines. Rural Change in a Philippine Setting: A General Report on the Five-Year Project "A Study on Alternative Extension Approaches". College, Laguna: UPCA-FHDO, 1971.
- Fitz-Gibbon, Carol Taylor and Lynn Lyons Morris. Evaluator's Handbook. Beverly Hills: Sage, 1978.
- _____. How to Design a Program Evaluation. Beverly Hills: Sage, 1978.
- _____. How to Measure Program Implementation. Beverly Hills: Sage, 1978.
- _____. How to Calculate Statistics. Beverly Hills: Sage, 1978.
- Goodman, Louis; John Hawkins, and Tetsuo Miyabara. Impact Analysis of Development Projects: Summary of the Case Study Approach. Paper prepared for the training program.

- Goodman, Louis and Ralph Love. Geothermal Energy Projects: Planning and Management. New York: Pergamon Press, 1980.
- _____. Project Planning and Management: An Integrated Approach. New York: Pergamon Press, 1980.
- Guerrero, Sylvia. Assessing the Impact of a Health Project: Some Notes on a Researcher's Experience. Paper prepared for the training program.
- Hawkins, John. Energy for Rural Development in the People's Republic of China. Honolulu: East-West Center Resource Systems Institute, 1980.
- Hicks, Norman and Paul Streeten. "Indicators of Development: The Search for a Basic Needs Yardstick". World Development (1979): 567-580.
- Hufschmidt, Maynard. The Role of Benefit Cost Analysis in Environmental Quality and Natural Resource Management. Working Paper. Honolulu: East-West Center Environment and Policy Institute, 1981.
- Joun, Richard Y.P. The Role of Policy Models in Urban Growth Management: A Case Study of Hawaii. Honolulu: State of Hawaii. Department of Planning and Economic Development. 1981.
- Koppel, Bruce M. "Private Investment in Agricultural Inputs and Sustaining the Green Revolution: Some Evidence from the Philippines". Indian Journal of Agricultural Economics (1978)33.2: 1-20.
- _____. A Preliminary Analysis of Fuelwood Use in the Bicol River Basin. Honolulu: East-West Center Resource Systems Institute, 1980.
- _____. The Evaluation Factor: A Handbook to Remind Program Evaluators of the Complexity of Their Task. Honolulu: East-West Center Technology and Development Institute, 1976.
- Korten, David. "Community Organization and Rural Development: A Learning Process Approach". Public Administration Review (1980): 480-511.
- Larson, David A. and Walton T. Wilford. "The Physical Quality of Life Index: A Useful Social Indicator?". World Development (1979): 581-584.
- Loether, Herman J. Descriptive Statistics for Sociologists. Boston: Allyn and Bacon, 1974.
- _____. Inferential Statistics for Sociologists. Boston: Allyn and Bacon, 1974.
- Overseas Development Council. "A Physical Quality of Life Index (PQLI)". International Development Review (1976)18.4: 34-37.

- Patton, Michael Quinn. Qualitative Evaluation Methods. Beverly Hills, Sage, 1980.
- _____. Utilization Focused Evaluation. Beverly Hills, SAGE, 1978.
- Prasartkul, Pramote, et.al. Towards the Development of a Territorial Indicator System for Thailand. Paper presented at Workshop on Territorial Indicators for Development Planning in Southeast Asia. Co-sponsored by the National Statistical Office (Thailand) and the East-West Center Resource Systems Institute. Pattaya, Thailand. May 12-14, 1980.
- Revelle, Roger. "Energy Use in Rural India". Science (1976)192: 969-975.
- Rosenberg, Morris. The Logic of Survey Analysis. New York: Basic Books, 1968.
- Rozental, Alek. A Parsimonious Method of Subregional Project Selection. Manila: NEDA-RDS, 1978.
- Schlegel, Charles. "Development, Equity and Level of Living in Peninsular Malaysia". Journal of Developing Areas (1981): 297-316.
- Sevilla, Jaime S. Improving the Planning Process: On Developing Linkages with Impact Research and Analysis. Paper prepared for the training program.
- _____. Improving the Planning Process: Project Development and Impact Research. Paper prepared for the training program.
- _____. Philippine Development Planning: Past and Present. Paper prepared for the training program.
- Siy, Robie. Rural Organizations for Community Resource Management: Indigenous Irrigation Systems in the Northern Philippines. Doctoral Dissertation. Cornell University. Department of City and Regional Planning. Ithaca, New York. 1981.
- Smith, Kirk, Jamuna Ramakrishna and Premlata Menon. Air Pollution from the Combustion of Traditional Fuels: A Brief Survey. Paper prepared for Conference on Air Quality Management and Energy Policies. Jawaharlal Nehru University. School of Environmental Sciences. Bombay, India. February 16-25, 1981.
- Umadhay, Alex. Regional Development Planning in the Philippine Setting: A Brief Exposition. Paper prepared for the training program.
- _____. Regional Project Development, Monitoring and Evaluation. Paper prepared for the training program.
- _____. The Regional Development Investment Program (RDIP): How It Fits into the Regional Plan. Paper prepared for the training program.

Webb, Eugene J., et.al. Unobtrusive Measures: Nonreactive Research in the Social Sciences. Chicago: Rand McNally, 1973.

Weldon, Peter. Concept Paper. Workshop on Territorial Indicator Systems for Development Planning in Southeast Asia. Bangkok: Ford Foundation, 1979.

Yeh, Stephen H.K. "The Use of Social Indicators in Development Planning". Pp. 61-68 in: UNESCO. The Use of Socio-economic Indicators in Development Planning. Paris: UNESCO Press, 1976.

Young, Ruth C. Social Indicators for Developing Countries: A New Approach. Honolulu: East-West Center Technology and Development Institute, 1975.

AGENCY REPORTS, STATISTICAL MATERIALS, UNPUBLISHED PAPERS, AND POLICY AND PROGRAM MATERIALS FROM THE FOLLOWING AGENCIES:

Republic of the Philippines. Food and Nutrition Research Council.

_____. Ministry of Health.

_____. National Economic and Development Authority. Philippine Institute of Development Studies. The Economic and Social Impact Analysis/Women in Development (ESIA/WID) Project.

_____. National Economic and Development Authority. Regional Development Staff.

_____. National Irrigation Administration.

State of Hawaii. Department of Education.

_____. Department of Planning and Economic Development.

United States. Department of State. Agency for International Development.

UNPUBLISHED RESEARCH MATERIALS AND ESPECIALLY DEVELOPED DATA COMPILATIONS FROM THE FOLLOWING INDIVIDUALS:

Saleem Ahmeu
George Beal
Penelope Canan
Donald Enoki
Louis Goodman
Donald Green
John Hawkins
Bruce Koppel
Tetsuo Miyabara

Richard Morse
Terry Rambo
Frances Randolph
Michael Santerre
Charles Schlegel
Robie Siy
Peter Smith
Y.H. Yang
Stephen Yeh

RESOURCE PERSONS

Dr. Saleem Ahmed
East-West Center
Resource Systems Institute

Dr. Florian Alburo
ESIA/WID Project
Micro Component Manager
and
University of the Philippines
School of Economics

Dr. George Beal
East-West Center
Communications Institute

Dr. Penelope Canan
University of Hawaii

Dr. Ledivina Carino
ESIA/WID Project
Micro Component
Principal Investigator (Roads)
and
University of the Philippines
Local Government Center

Mr. G.L. Crothers
State of Hawaii
Department of Planning and
Economic Development

Dr. Donald Enoki
State of Hawaii
Department of Education

Mr. Tatsuo Fujimoto
State of Hawaii
Department of Planning and
Economic Development

Mr. Louis Goodman
East-West Center
Resource Systems Institute

Dr. Donald Green
East-West Center
Pacific Islands Development
Program

Dr. Sylvia Guerrero
ESIA/WID Project
Micro Component
Principal Investigator (Health)
and
University of the Philippines
School of Social Work

Dr. John Hawkins
University of California at
Los Angeles
Curriculum Research Center

Ms. Kajorn Howard
East-West Center
Resource Systems Institute

Dr. Maynard Hufschmidt
East-West Center
Environment and Policy Institute

Ms. Pat Ishitani
State of Hawaii
Department of Education

Mr. Dale Jackson
East-West Center
Resource Systems Institute

Dr. Twig Johnson
Policy Planning and Coordination
Bureau/Evaluation
United States Agency for
International Development

Dr. Richard Joun
State of Hawaii
Department of Planning and
Economic Development

Dr. Bruce Koppel
Impact Assessment Internship
Program Coordinator and
Food Systems Program Leader
East-West Center
Resource Systems Institute

Dr. Kenneth Lowry
University of Hawaii

Mr. Ed Marcus
State of Hawaii
Department of Planning and
Economic Development

Dr. Shelly Mark
University of Hawaii

Ms. Premlata Menon
East-West Center
Resource Systems Institute

Mr. Tetsuo Miyabara
East-West Center
Resource Systems Institute

Mr. Richard Morse
East-West Center
Resource Systems Institute

Mr. Calvin Nekonishi
State of Hawaii
Department of Budget and
Finance

Ms. Jamuna Ramakrishna
East-West Center
Resource Systems Institute

Dr. Terry Rambo
East-West Center
Environment and Policy Institute

Ms. Frances Randolph
University of California at
Berkeley

Dr. Romeo Reyes
ESIA/WID Project Director
and
Philippine Institute for
Development Studies

Dr. James Roumasset
University of Hawaii
and
East-West Center
Resource Systems Institute

Mr. Michael Santerre
East-West Center
Resource Systems Institute

Mr. Paul Schwind
State of Hawaii
Department of Agriculture

Dr. Charles Schlegel
East-West Center
Resource Systems Institute

Mr. Richard Scudder
State of Hawaii
Office of Environmental
Quality Assessment

Mr. Jaime Sevilla
ESIA/WID Project
and
Philippine Institute for
Development Studies

Dr. Robie Siy
Cornell University
Department of City and
Regional Planning and
East-West Center
Resource Systems Institute

Mr. Frank Skrivanek
State of Hawaii
Department of Planning and
Economic Development

Dr. Peter Smith
East-West Center
Population Institute
and
ESIA/WID Project Consultant

Mr. Paul Tajima
State of Hawaii
Hawaii Community Development
Authority

Ms. Rokiah Talib
East-West Center
Environment and Policy Institute

Dr. Y.H. Yang
East-West Center
Resource Systems Institute

Dr. Stephen Yeh
University of Hawaii

SPECIAL GUEST RESOURCE PERSONS

Dr. Manuel S. Alba
Minister
Ministry of the Budget
Government of the Republic of the Philippines

Dr. Jose Lawas
Assistant Director General
National Economic and Development Authority
Government of the Republic of the Philippines

APPENDICES:

FIELD APPLICATION PROPOSALS

AN IMPACT STUDY OF THE PANAY UNIFIED SERVICES
FOR HEALTH (PUSH) PROJECT IN SELECTED
PUSH BARANGAYS IN ILOILO

by Mrs. Concepcion Mancilla

I. Rationale:

This paper aims to present an impact study of the Panay Unified Services for Health (PUSH) Project.

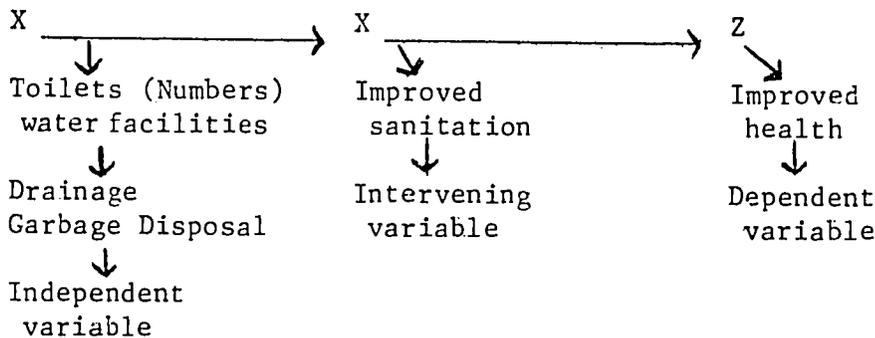
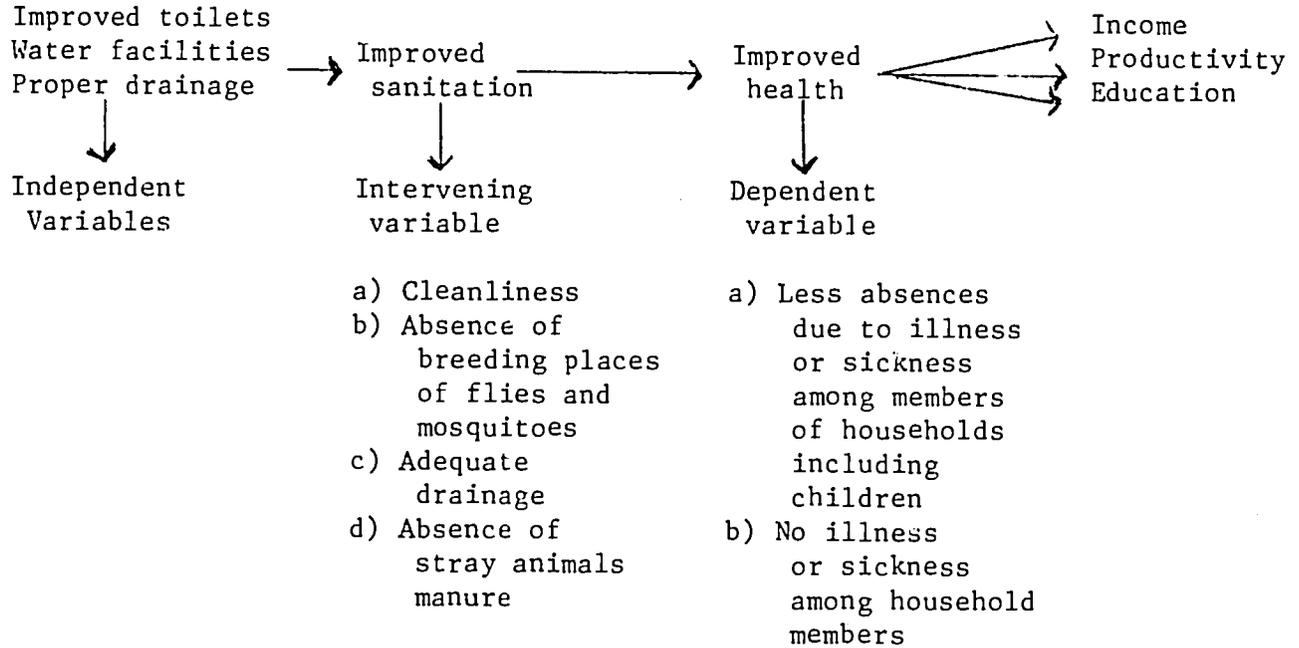
Environmental sanitation facilities is one of the concerns of PUSH Project since it has been identified that the major causes of morbidity in Panay Islands are directly or indirectly related to inadequate and/or unsafe water sources, unsanitary means of human waste disposal, improper disposal of garbage, and poor drainage systems.

To achieve the purpose of providing an adequate safe water supply and sanitary waste disposal facilities to the project beneficiaries, the project will construct drilled deep wells, shallow driven wells, improve open dug wells and construct water-sealed toilets to the project beneficiaries, in the Barangays (PUSH).

II. Impact Processes and Relationships:

Improved toilets, adequate and safe water facilities, proper garbage disposal and proper drainage would lead to improved sanitation. Then this would in turn lead to improved health, and then would later lead to income growth, productivity and education.

Diagram Showing the Relationships of the Variables



With the construction of environmental facilities, the composite picture of the selected depressed Barangay would undergo a change. But given a situation where the Barangays were in, before PUSH project implementation, the description of the depressed Barangay would likely to be a Barangay where the household surroundings are unclean, stagnant pools under and around the house, which serves as breeding places for mosquitoes and flies and other insects, stray animals waste scattered around the surroundings, the smell characteristic of human waste around the atmosphere and others which are signs of poor

33

environmental sanitation conditions in the Barangay.

The PUSH Project is supposed to bring about an atmosphere of improved sanitation characterized by the cleanliness of the surroundings inside and outside the house, absence of stagnant pools, absence of breeding places for flies and mosquitoes and other insects, adequate drainage, availability and accessibility of safe water supply and sources, sanitary toilets, proper disposal of garbage and proper drainage.

These factors mentioned above will give us a clear picture of beneficiaries of the PUSH project as healthy individuals who are not sick with any communicable disease and less or no absences of children in school. And this in turn would lead to productivity as the loss of work due to illness is reduced or none at all.

Aside from the two impacts as the result of the PUSH on the health of the individuals there would also be an increase in income as women in the households who used to fetch water due to the water facility problem can now spend their time or engage in gainful activities, e.g. backyard gardening, cottage industries, and poultry and swine. This would mean an increase in income for the household.

The PUSH Project outputs will benefit the beneficiaries or residents in the selected depressed Barangays.

Areas of Concern	Progress Variables/ Indicators	Impact Variable Indicators
1. Environmental quality	Use of Toilet facilities Use of sanitary disposal facilities	Presence of adequate water Drainage around and under the house
2. Education		Less absenteeism of children in school
3. Health		No illness or sickness among household members Less absence of children in school
4. Productivity		Number of women engaged in backyard gardening, poultry and swine, cottage industries
5. Income growth		Self-help project income by type of project

The unit of analysis of this study is the Barangay and the units of observation are the households. This study will find out, which among the Barangays underwent a change as a result of the PUSH project.

III. Methodologies and Techniques:

1. The study proposes to use secondary data or the data obtained by the Barangay health worker (BHW) in her community survey. And the BHW's report to the Rural Health Unit will also be utilized. The BHW's logbook if needed will be resorted to also.

2. The study area chosen are the selected PUSH Barangays in the province of Iloilo.

The total number of Barangays is eighteen (18) with a total number of households of 993 and a total household population of 5,521.

3. The collection and compilation will be done by the researcher. This data will be sorted, analyzed and collated at the Rural Health

Office No. 6. The technique that will be used in the analysis is the "Single Group Time Series Design."

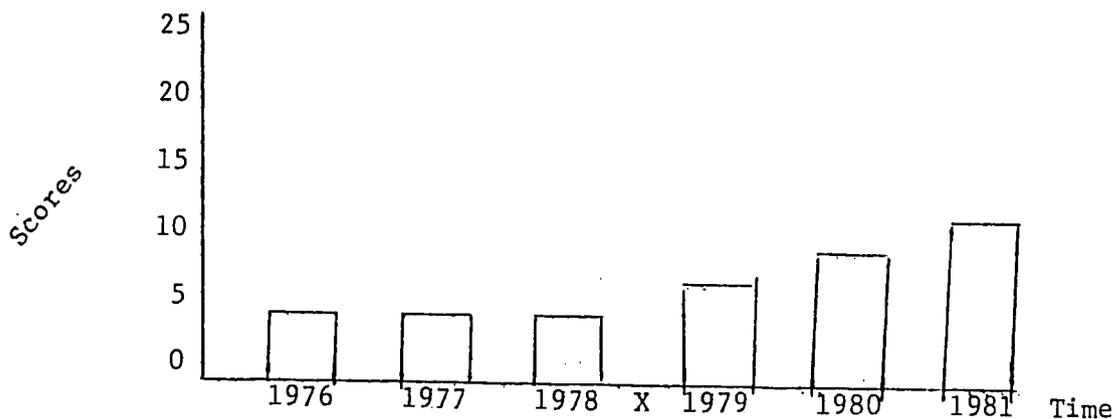
Diagram of the Single Group Time Series Design

	T i m e					
	1	2	3	4	5	6
Experimental Group	0	0	0	X 0	0	0

In this design the same measure will be made on the same group at regular intervals several times before and several times after the program was implemented. By seeing if Program "X" show any change of the trend in the results, we can assess whether or not Program "X" might have had an impact on the outcome measures.

This time series design permits better interpretation of results. The advantage of a time series design is that it gives a series of measurements before and after the implementation of the program. This gives a more accurate picture of the effect of the program. This design will show an apparent change in the measurements as a plot of scores can provide a clear picture of progress over time.

Diagram Showing the Measurements in the "Single Group Time Series Design"



The hypothesis for this study is:

That improved environmental sanitation would lead to improved health, and improved health would have an impact on productivity, income, and education.

An extended time period:

The time frame for this study is 6 weeks. The first two weeks will be spent in the collection of secondary data from the municipalities, and if necessary, from the BHW's logbook in the corresponding Barangays.

The third week will be spent on a few check-up in the field as to the reliability of the data.

The fourth and remaining weeks will be spent on analysis and collating the data. And finally the report writing of the study results.

The table necessary for the study will have the following format:

Table I Number of Households in the PUSH Selected Project in 18 Barangays in Iloilo 1977-1981

Barangays Name	Barangays Population	Number of Households	Characteristic
1			
⋮			
18			

Computations will be based on the following formulas:

1. $\frac{\text{Total no. of HH's sanitary toilets/Bgy}}{\text{Total no. of HH's in the Barangay}} \times 100 = \% \text{ of HH's with Improved toilets}$
2. $\frac{\text{Total no. of days sick in all HH's/Bgy (children)}}{\text{Total no. of school days in 1 yr.}} \times 100 = \% \text{ of absenteeism}$
3. Other variables like no. of toilets, water supply and others will be computed as shown in previous tables as low, high.
4. Mean scores of all the Barangays will be computed by Barangay and totalled by year. Then scores will be plotted to the Time Series table.

51

5. Comparison of the scores of the years total (1976-1978) and years (1979-1981) will be made. Variations or changes will be noted. And variances computed or another alternative will be computing for the Δ (rate of change).

An example of the tables to be produced is:

Number of Toilets and Improved
Health Controlling for Environmental Sanitation

		<u>% Toilets</u>					
		<u>Low</u>		<u>Medium</u>		<u>High</u>	
		<u>Environmental Sanitation</u>					
		<u>good</u>	<u>bad</u>	<u>good</u>	<u>bad</u>	<u>good</u>	<u>bad</u>
<u>Health</u>	<u>good</u>						
	<u>bad</u>						

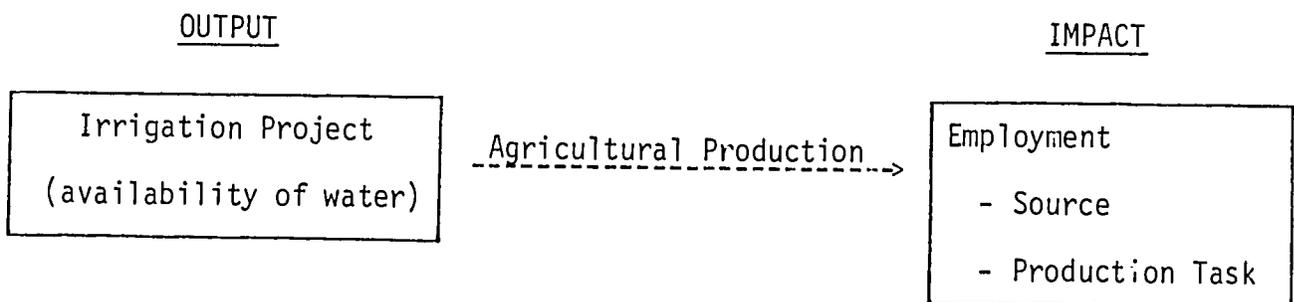
A RESEARCH PROPOSAL TO STUDY THE IMPACT OF
SMALL-SCALE IRRIGATION PROJECT ON EMPLOYMENT

by Ramon B. Perez

Rationale

The purpose of this study is to look into the impact on the different levels of employment on farms as a result of the irrigation project. One interesting question to ask is whether irrigated farms require more labor than non-irrigated farms. This study intends to investigate on-farm employment by source and production task, taking into account the adequacy and inadequacy of water on the farms, which influences the change in crop production and hence, also the behavioral change on farm employment. Specifically, this will mean looking into the different sources of labor used (i.e. family labor, hired labor, in-kind labor), the variation of employment on the different stages of production activities from pre-planting to post-harvesting phase, the effects of the wet and dry season croppings on labor requirement and the other factors that may lead to a change in manpower needs, like manpower availability in the locality or whether different people are involved in the different production activities.

Conceptual Framework, Hypothesis and Indicators



This conceptual framework tries to test the relationship that availability of water on the farms will bring about an increase in the level of agricultural production and thereby lead to a change in the pattern of employment.

Employment will be broken down by source and production task.

Employment

It is hypothesized that small-scale irrigation will increase farm employment through:

- a) higher labor requirements of irrigated crops compared to non-irrigated crops
- b) increased labor utilization due to higher cropping intensity.

Area of Concern

Impact Indicators

Employment

- 1. Labor utilization per hectare by crop
- 2. Total man-days worked per year

Method of Analysis

The methodology that will be used here will be the comparative approach. It is an approach of comparing impact indicators of an irrigated area with those of a non-irrigated area. Using the "with and without" project comparisons involves comparing performance in the "with project" situation with the performance in a similar "without project" circumstance. This can be further specified as the comparison of farms with adequate supply of water against farms with inadequate supply of water for the wet and the dry seasons. Accessibility to water is an important factor in analyzing farm performance as this has a great bearing in crop production and also farm labor needs.

The behavior of farmers in terms of cropping patterns and hence employment--partly depends on how adequate or inadequate they perceive the water to be. For example, in spite of being irrigated, if farmers perceive water availability as inadequate, they may behave as if their farms were not irrigated.

In this study therefore, farmer's ratings as to the adequacy or inadequacy of water will partly determine the impact on production decisions and employment.

Measurement of Impact Indicators

1. Number of persons employed per hectare by crop, by sex, by type of labor (with and without irrigation).
2. Number of man-days utilized per hectare by crop, by sex, and by type of labor (with and without irrigation). Assuming that the total area is fixed, the change in labor utilization due to irrigation may be viewed as the sum of two components:

- 1) the change in labor utilization per hectare in the wet season due to higher labor requirements of irrigated crops given by

$$\Delta L^W = K^W \Delta (L^i - L^n)$$

where:

Δ = total area

L^i = labor requirements per hectare for irrigated crop

L^n = labor requirement per hectare for non-irrigated crop

K^W = proportion of irrigated area to total area in the wet season,

- and 2) the increase in labor utilization per hectare due to the increase in number of croppings in the dry season made possible by irrigation given by

$$\Delta L^d = \alpha K^d \Delta (L^i)$$

where:

α = average extra croppings

K^d = proportion of irrigated area to total area

Δ = total area

L^i = labor requirements per hectare of irrigated crop

note: Formula gathered from ESIA/WID (micro) discussion paper no. 79-29 by Tirso B. Paris, Jr., Sept. 1979.

The measurement of impact can also be obtained by subtracting indicators of study area with irrigation and without irrigation. The required data may be obtained by sample surveys on both the irrigated area and non-irrigated area.

DATA Collection

DATA Collection will be at the farm and household levels, since greater impact will be felt on the farms and household levels. Sampling will be designed in such a way that the following information will be represented.

1. Farm sizes
2. Farm production (wet & dry season)
3. Number of hectares irrigated (by crop, area and season)
4. Type and Quantity of irrigation
5. Water distribution (adequate, inadequate)
6. Labor utilization (by crop, operation & season)
7. Man- days of labor employed
 - by type of labor (hired, in-kind, family)
 - by sex
 - by task
 - form of payment

Dummy Table: showing relationship between irrigation, production and employment.

		IRRIGATED FARMS		NON-IRRIGATED FARMS	
		<u>Production</u>			
		Low	High	Low	High
Employment	Low	_____	_____	_____	_____
	High	_____	_____	_____	_____

42

Research Study Duration:

The research study will take approximately six weeks to finish. It will start on Jan. 15, 1982 and end by around the first week of March 1982.

Study Area

The study area will be located around the Zamboanga City vicinity. The location was chosen with the following factors in mind namely;

1. transport facilities availability
2. proximity - low travel cost
3. communication difficulties
4. logistic constraints
5. time constraints
6. security problems

Manpower Requirement:

- 1 - Researcher
- 3 - Assistant Researchers
- 1 - Clerk-typist
- 1 - Driver

Manpower needs will be tapped from the Project Proponents Office for the duration of the project on a case to case basis or as the need arises.

Project Cost:

The proponent intends to seek financial supports form the ESIA/WID project for the following items, namely:

1. allowances for personnel involved in the research
2. research materials cost
3. printing cost
4. travel cost (gasoline expenses)

Proponent agency will shoulder the manpower requirements and will provide transport vehicles to and from the study area.

(3)

IMPACT ANALYSIS OF SMALL-SCALE IRRIGATION PROJECT

by Diamadel Dumagay

I. Importance of the Study

Irrigation project development has generally been considered as one of the key factors towards meeting the growing demand for food. Needless to say, irrigation projects represent a critical infrastructure for agricultural development in rice-growing regions. Irrigation projects are undertaken primarily as a means of increasing the productive capacity of agricultural lands by assuring a steady supply of water during months of the year.

Improved water supply control is recognized to be more important to the achievement of the full potential of modern rice varieties and most promising means of increasing food production.

II. The hypothesized impact of small-scale irrigation on specific concerns are as follows:

1. Agricultural production and productivity. It is hypothesized that an irrigation project will bring about increased agricultural production and productivity primarily through (a) increased yield per hectare in both wet and dry seasons through better water control, (b) higher cropping intensity, and (c) increased physical land cultivation.
2. Income growth. Through increased agricultural production and productivity, it is hypothesized that irrigation will result in increased absolute income of farm households regardless of tenure, including landless labours.

3. Distribution of income. It is hypothesized that within the influence area, small-scale irrigation project will lead to improved distribution of income. That means that smaller farmers and landless laborers will benefit relatively more from small-scale irrigation project.
4. Employment. It is hypothesized that small-scale irrigation will increase both farm and non-farm employment through (a) higher labor requirements of irrigated crops compared to non-irrigated crops, (b) increased labor utilization due to higher cropping intensity, and (c) higher off-farm employment due to higher volume of agricultural output transported, processed and marketed.

III. Research Design: Considering that the small-scale irrigation project has passed its implementation phase and is assumed to be in operation, some kind of a summative operation will have to be done. Hence the design will be a true control group with post-test only design.

	TIME	
	1	2
	(Pre)	(Post)
Irrigated	X	0
Rainfed		0

1/2

IV. Linkages: INPUTS, OUTPUTS, EFFECT AND IMPACTS

<u>INPUTS</u>	<u>OUTPUT</u>	<u>PROGRESS INDICATOR</u>	<u>EFFECTS</u>	<u>IMPACTS</u>
- Funds	Irrigation water	- Proportion of area irrigated	- Increased yield per hectare	1. AGRICULTURAL PRODUCTION, PRODUCTIVITY AND INCOME
- Construction material		- Proportion of area serviced	- Increased total volume of production	1. Yield per hectare
- Manpower		- Proportion of area planted to modern varieties	- Higher cropping intensity	2. Volume and Value of Production
- Equipment		- Cropping intensity index	- Increased physical land area cultivated	3. Average net income per hectare and per farm
		- User rate of modern inputs		4. Total Household Income
				2. INCOME DISTRIBUTION
				1. Earners share-- landlord, owner-operator, rent, <u>landless laborer</u>
				3. EMPLOYMENT
				1. Labor Utilization per hectare
				2. Seasonal Distribution of employment
				3. Total employment in the area

V. Data Collection

Data will be collected at the household farm and the community levels. Since it is expected that the significant impact will be at the farm and household levels, the data gathering activities will be primarily targeted toward these levels. Sampling will be designed in such a way that the following are represented:

1. Tenure groups (landlords, share-tenants, owner-operator and landless laborers).
2. Farm Sizes
3. Cropping pattern
4. Type of irrigation
5. Season (wet and dry)

VI. Analytical Method

Testing the statistical significance of the difference between two mean incomes:

	Mean of Y	Standard Deviation	Number of Y's
Irrigated	$\bar{Y}_E =$	SE =	NE =
Rainfed	$\bar{Y}_C =$	Sc =	Nc =

where $Sd = \sqrt{[SE^2 (nE-1) + Sc^2 (nC-1)] [\frac{1}{nE} + \frac{1}{nC}]}$

Using the value of Sd,

Value for $t = \frac{\bar{Y}_E - \bar{Y}_C}{Sd}$

t =

Interpret the results by comparing the obtained T-values to Tabled T-value.

If the obtained T-value is larger than the Tabled T-value then it is significantly significant.

A. Household Data

1. Size of family
2. Available family labor
3. Size of farm
4. Number of farm parcels
5. Land Tenure (share-tenant, owner-operation, landlord, lease)
6. Proportion of farm produce consumed and marketed by crops, by season.

B. Farm Data

1. Types of crops cultivated (by area and season)
2. Variety of each crop planted
3. Number of hectares irrigated (by crop, area and season)

C. Economic Data

1. crop prices (by crop and season)
2. Prices of inputs (fertilizers, pesticides, herbicides and seeds)
3. Fuel costs (gagoline, diesel and electricity)
4. Transportation cost
5. Interest rate
6. Rental of machine
7. Prices of other farm implement

C. Economic Data (continued)

8. Wage rate (by operation, by season)
9. Land value and rent
10. Agricultural taxes
11. Amount of loans from bank

Table 1.

TOTAL AND AVERAGE PRODUCTION BY SIZE OF FARM, IRRIGATED AND RAINFED FARMS

Farm Size (hec) Project	0-1.5		1.5-2.5		2.5-3.5		3.5-4.5		4.5 above	
	total prod'n	ave. prod'n								
Irrigated										
Rainfed										

Table 2.

AVERAGE NET INCOME BY FARM SIZE, IRRIGATED AND RAINFED FARM

Farm Size (hec) Project	0 - 1.5	1.5 - 2.5	2.5 - 3.5	3.5 - 4.5	4.5 above
Irrigated					
Rainfed					

Table 3.

AVERAGE NET INCOME BY LAND TENURE, IRRIGATED AND RAINFED FARM

Land Tenure Project	LANDLORD	OWNER-OPERATOR	SHARE-TENANT	LANDLESS LABOR
Irrigated				
Rainfed				

Table 4.

INCOME SHARE BY LAND TENURE, IRRIGATED AND RAINFED FARM

Land Tenure Project	LANDLORD	OWNER-OPERATED	SHARE-TENANT	LANDLESS LABORERS
Irrigated				
Rainfed				

Table 5.

FARM EMPLOYMENT, MAN-DAYS, IRRIGATED AND RAINFED FARM

Project	I R R I G A T E D			R A I N F E D		
	FAMILY LABOR	HIRED LABOR	EXCHANGED LABOR	FAMILY LABOR	HIRED LABOR	EXCHANGED LABOR
Farming Activities						
Land Preparation						
Transplanting						
Fertilizing						
Spraying						
Weeding						
Harvesting						
Threshing						
Hauling						
Other						
TOTAL						

IMPACT OF THE AQUACULTURE PRODUCTION PROJECT:

A RESEARCH DESIGN

by Mercedita Agcaoili

I. Introduction

The Aquaculture Production Project (APP) is a joint undertaking of the USAID and the Philippine Government primarily "to strengthen the country's aquaculture research and extension capabilities and thereby increasing the total amount of protein available to the Filipinos". It was started in 1974 after the submission of the proposal to USAID for technical assistance.

While the project envisioned to cover all aspects of aquaculture, it focused initially on milkfish production since the technology for this kind of endeavor was readily available then at low cost. Milkfish research was, therefore, strengthened and was conducted at the Brackish water Aquaculture Center in Leganes, Iloilo. The extension efforts, on the other hand, were concentrated in two pilot areas, one in Panay (Region VI) and the other in Bicol (Region V),

II. Objective of the Research Study

The present study will be focused on the impact of milkfish production efforts on several areas of concern including employment, income growth and sharing, health and nutrition, education, participation and energy. While all these areas are equally important for overall social and economic growth, the study will be centered on income growth and how this growth is shared by various elements involved in milkfish culture. Thus, it will primarily look into how the extension services of the project have brought about increases in milkfish production and improvement of productivity and consequently affected

the income levels of the project recipients vis-a-vis the non-recipients.

III. The Research Design

A. General Framework

Diagram 1 presents the four major aspects in an impact study exercise. These include project inputs, project outputs, the expected direct effects of such outputs and, going on further, their possible indirect effects. In this particular project, the outputs being talked about are the extension services and modern technology being disseminated to individual fish farm households by the APP. The direct impacts will be the effect of such services on production and productivity while the indirect impacts will cover income growth and how this increase is shared among the people involved in the production efforts.

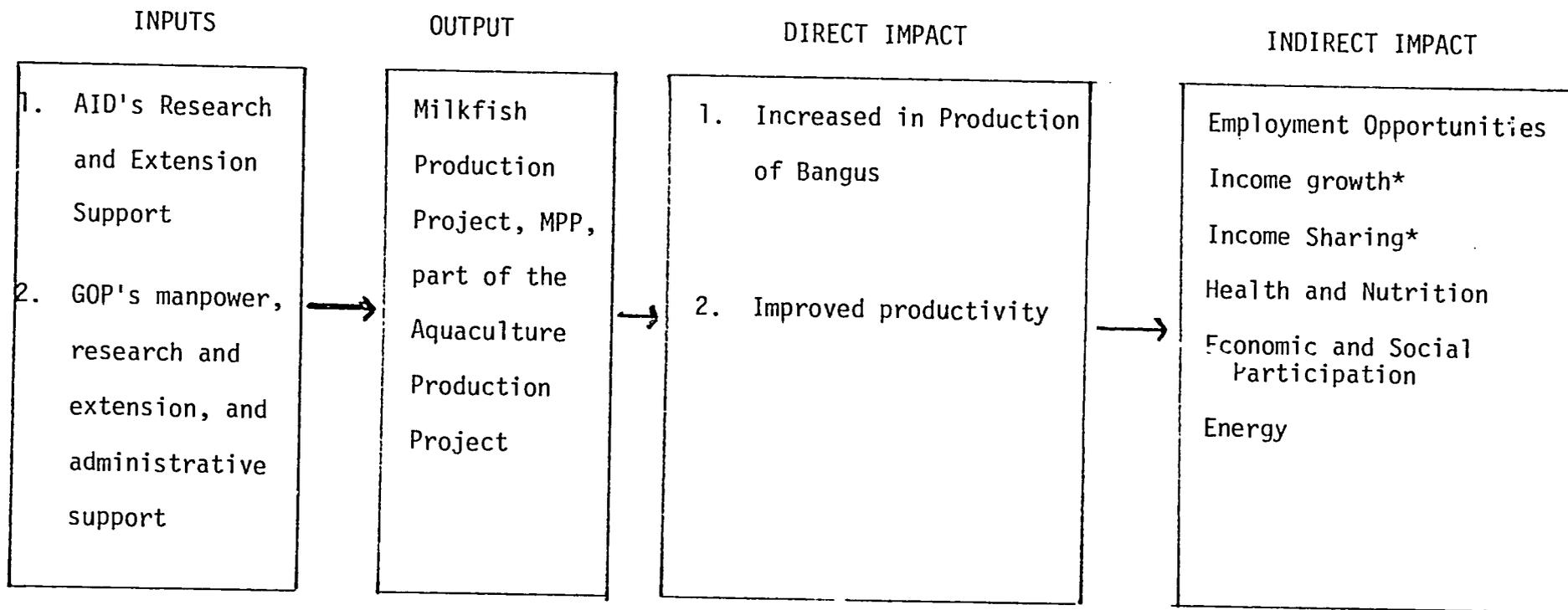
Diagram 2, on the other hand, shows a more detailed picture of the flow from outputs to impacts. Some intervening variables are presented here which could affect, positively or negatively, the relationship of extension services and production/productivity and, likewise, the latter with income growth and shares.

B. Hypotheses, Variables and Indicators

Table 1 describes the variables and indicators to be used in the study. And on the basis of these variables and indicators, the following hypotheses will be tested and verified:

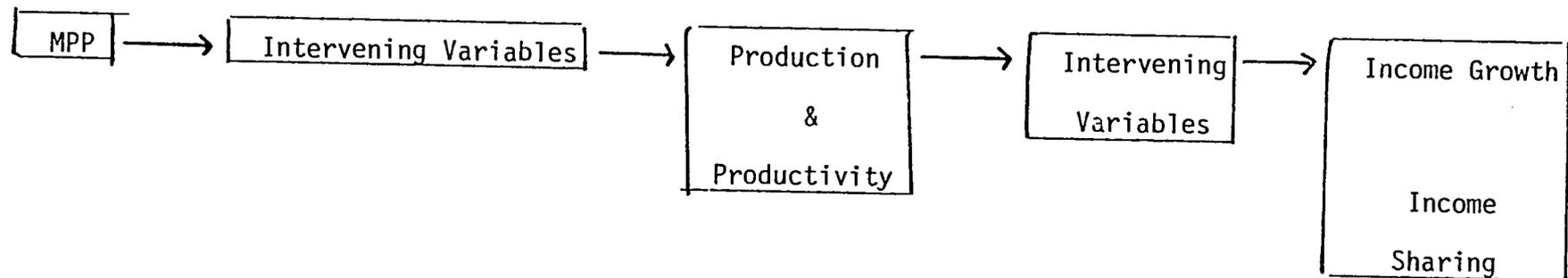
1. Research and extension services made available through MPP lead to development of more fishponds for milkfish or "bangus" culture thereby increasing total production of bangus. In addition, these will also improve yield levels of bangus per unit area of fishfarm.

Diagram 1: Milkfish Production Project and Its Impact on Production, Productivity, Income Growth and Income Distribution



*Note: For the purpose of this study, project's effects on income growth and income sharing will be pursued only.

Diagram 2: Linkages Between Outputs and Impacts



Intervening Variables

- a) Supply of fishfarm inputs
- b) Prices of inputs
- c) Level of experience/expertise of operators/caretakers
- d) Level of education including formal and informal training undertaken
- e) Socio-economic status of people involved in milkfish production
- f) Availability of support infrastructure (storage, ice plants, etc.)

5

Table 1
Definitions of Variables and Indicators

A. Variable Directly Affected by MPP	Indicator
1. Productivity	
a. Increase in the volume of bangus per unit area	i) Average number of kilos of bangus harvested per hectare annually or per season
2. Production	
a. Increase in total volume of bangus harvested in fishfarms	i) Total number of kilos or metric tons of bangus harvested per season or per hear
b. Income in total area devoted to milkfish production	i) No. of hectares used for bangus culture annually ii) Annual increment in the number of hectares of brackish water areas used for bangus culture
B. Variables Indirectly Affected by MPP	
1. Income Growth: Increase in earnings (profits, wages, commissions, fringe benefits, etc.) obtained directly from bangus production	i) Gross and net income obtained by operators from the sale of bangus per harvest season (per farm per season) - ii) Value of wages, commission and non-cash benefits obtained by farm caretakers per season

B.1. Income Growth (continued)

Indicator

- iii) Comparative values of income obtained by operators, caretakers, contractual laborers, fry gatherers, etc. from bangus farming.
- iv) Annual/seasonal gross and net incomes from fry collection of concessionaires and dealers
- v) Value of income, monthly per season, earned by fry catchers per thousand pieces of fry sold to concessionaires and/or dealers

2. Income Sharing

Apportioning of earnings obtained from milkfish production among different types of persons involved.

- i) Comparison of average daily or monthly earnings obtained by individuals engaged in:
 - a. fry collection: gatherers, dealers, concessionaires
 - b. farming: operators, caretakers, other hired labor (salaried and contractual)

C. Intervening Variables

- 1. Technical: Presence/availability of support infrastructure

- i) Number and capacity for services of following facilities:
 - a. ice plants
 - b. transportation
 - c. storage facilities

C.1 Intervening Variables (Continued)	Indicator
	ii) Usage and non-usage of infrastructure facilities
2. Economic: Availability and cost of inputs:	i) Average cost per season of these commodities or supplies
i) stock: fry or fingerbings	ii) No. of dealers or stores at any one time which sell inputs
ii) fertilizers: organic and inorganic types	
iii) pesticides, etc.	
3. Social and Institutional	
a. Experience and/or technical expertise in milkfish culture of operators and caretakers	i) Average number of years that operators/ caretakers have been engaged in bangus farming
	ii) Formal and/or non-formal training received by operators and caretakers on aquaculture
	ii) Length and intensity of exposure to BFAR extension services
b. Socio-economic status of fish farm operators	i) Educational background
	ii) Total income obtained annually by farmers from aquaculture and other occupations

B. Hypothesis, Variables and indicators (continued)

Productivity and production levels in fishfarms are, however, influenced by other factors. Economic factors, such as cost of inputs and the feasibility of large-scale farming as supported by existing infrastructure facilities for icing, storage, etc., affect production efforts. Social variables which mediate the effects of MPP efforts on productivity and production are those found in the personal background of fish farmers, experience in milkfish culture of operators and caretakers, the extent to which farmers are exposed to BFAR extension services, their educational level and the training courses they have undertaken in relation to this activity.

2. Improved productivity increases the level of income of individuals involved in various phases of bangus culture. However, this income growth may not necessarily benefit equally all the people involved in the production activity. Functional shares from this increased income may differ among concessionaires, operators, caretakers, dealers, hired laborers and fry gatherers.

Extraneous variables, both social and economic in nature, may again influence the attainment of income growth and the proportionate sharing of the increment among the various personnel involved. The most likely factor that could intervene in the above relationship is the socio-economic status of operators, caretakers, etc.

C. Sources of Data

All information and data for the study are gathered from Aklan, one of the two pilot areas for milkfish culture under the MPP. A set of baseline data was gathered in a survey made in 1974 from about 2,000 fishfarm households. Another set was again collected in 1978 from the same respondents.

The data/information gathered include production and productivity information, input usage (both materials and labor) socio-economic variables like income levels, years of experiences, etc. The following data sources will also be used to augment and supplement surveyed data:

1. BFAR (Iloilo) clinical profile of "extended" fishfarm operators and caretakers;
2. BFAR Socio-economic data on operators (caretakers and other personnel involved in milkfish culture;
3. BFAR Annual Report (Iloilo)
4. Data/documents from other institutions like: Brackish water Aquaculture Center; Southeast Asean Fisheries Development Center (SEAFDEC): Fisheries Industry Development Council (FIDC) and Philippine Fisheries Marketing Authority (PFMA).
5. Studies of Special Studies Division, Ministry of Agriculture

D. Sampling Procedure

Stratified random sampling will be used to draw a sub-sample of fishpond operators and caretakers in the study area. The size of the sub-sample will be determined later and will include both recipients and non-recipients of MPP services. The stratification is carried on by pond sizes:

- A: fishponds less than 5 hectares
- B: fishponds of 5 to 20 hectares
- C: fishponds greater than 20 hectares

E. Method of Analysis

A pre test-post test design with control group will be used for the study (see Diagram 3). This design will enable us to determine the changes which we can attribute to the project from those that occurred as a result

Diagram 3: Experimental Design

Farm Size	WITHOUT MPP a_1		WITH MPP a_2	
	1 9 7 4 b_1	1 9 7 8 b_2	1 9 7 4 b_1	1 9 7 8 b_2
< 5 hectares (c_1)	a_1 b_1 c_1	a_1 b_2 c_1	a_2 b_1 c_1	a_2 b_2 c_1
5 - 20 hectares (c_2)	a_1 b_2 c_2	a_1 b_2 c_2	a_2 b_1 c_2	a_2 b_2 c_2
> 20 hectares (c_3)	a_1 b_1 c_3	a_1 b_2 c_3	a_2 b_1 c_3	a_2 b_2 c_3

a_i = recipient or non-recipient

b_i = year data is available

c_i = farm sizes

of natural growth or development of milkfish culture. Tabular analysis will be undertaken where sample means will be compared across farm sizes and at time periods. Tests of significance will be applied like t-test, etc.

Some of the dummy tables for analyzing the results are attached as appendices. Such tables will be made for each of the recipient and non-recipient sample groups.

F. Some Limitations of the Study

The quantitative analysis of the research study may probably be limited by the quality of data obtained from the survey. The method of analysis may therefore, be slightly modified to suit the data in mind.

Appendix: Average Productivity and Level of Experience

Farm Size	1 9 7 4				1 9 7 8			
	< 2 yrs.	Level of Experience 2-5 yrs. 5.1-10 yrs.		>10 yrs	< 2 yrs.	Level of Experience 2-5 yrs. 5.1-10 yrs		>10 yrs.
< 5 has.								
5 - 20 has.								
> 20 has.								
Average, All Farms								

Average Daily Income and Level of Education/Level of Experience*

Personnel Categories	1 9 7 4				1 9 7 8			
	<2 yrs.	Level of Education 2-5 yrs. 5.1-10 yrs.		>10 yrs.	<2 yrs.	Level of Education 2-5 yrs. 5.1-10 yrs		>10 yrs.
Operators								
Caretakers								
Concession- aires								
Dealers								
Fry Gatherers								
Other Hired Labor								
Average, All Categories								

*A similar table for level of Experience

67

Appendix: Average Daily Income of Personnel Involved in Milkfish Culture, by Farm Sizes

Personnel Categories	1 9 7 4				1 9 7 8			
	<5 has.	5-20 has	>20 has.	Average, All Farms	<5 has.	5-20 has.	>20 has.	Average All Farms
Operator								
Caretaker								
Concessionaire								
Dealer								
Fry Gatherers								
Other Hired Labor								
Average, All Categories								

Appendix: Average Number of Years Engaged in Milkfish Culture, as of 1978

Personnel	0-5 has.	5-20 has	>20 has	Average All Farms
Operator				
Caretaker				
Concessionaire				
Dealer				
Fry Gatherer				
Other Hired Labor				
Average, All Categories				

2

RESEARCH DESIGN FOR ANALYZING
IMPACT OF A RURAL ROAD PROJECT

by

Elma V. Garcia

I. Introduction:

An improved road network is just one vital factor for development. Improved roads not only provide easy and cheap means of transporting farm products to market center, but an equally important good road serves as a production incentive for farmers in accelerating the agricultural potential of their farmlands. At the same time, this paves the way for population dispersal and mobility.

The rural road project, whose primary objective is to serve small farmers and fishermen, plays an important role in the social and economic development of the area,

Studies shows that positive effects of roads are fairly evident. Farmers particularly are dependent upon roads to carry their products to market or to food processing centers,

Although it takes some time before the impact of a road project can be felt, prevailing conditions within the influence areas studied were such that in a year's span significant changes, directly and indirectly attributable to the road project, has already taken place.

II. Objective of the Study:

The Rural Roads Program provides that each type of road per province be subjected to case studies. An in-depth study of road is conducted wherein socio-economic survey in the influence area before road construction and every year for the next three years are gathered. For each road subjected for in-depth study, a counterpart road of same type is designated to be surveyed in the influence area but of which will not undergo any improvement as long as the study is undertaken. These roads are designated as in-depth evaluation

roads (IDE) and evaluation control roads (ECR) respectively.

For purposes of this study, I intend to select one type of road, a penetration, wherein both IDE and ECR data before and after construction are available.

The before construction of road project, surpluses in the farm had a hard time reaching the market, no road or bad road discourages farmers to produce more knowing that their produce, like the perishable crops spoil easily and its impractical to market.

With an improved road, transport will be available, there's efficient flow of produce from farms to the market and consumers. It also provide access through the necessary inputs to agriculture (e.g. technical know-how, fertilizers, pesticides, credit, etc.) are brought to the farmer.

Due to these, and among other effects, the researcher is interested to look into the impact of the road project on Productivity.

III. Specification of Relationship:

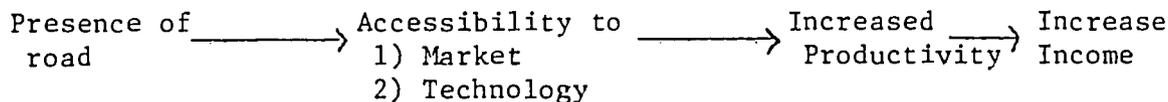
1. Research Problem:

To analyze the impact of a rural road project on farmers productivity.

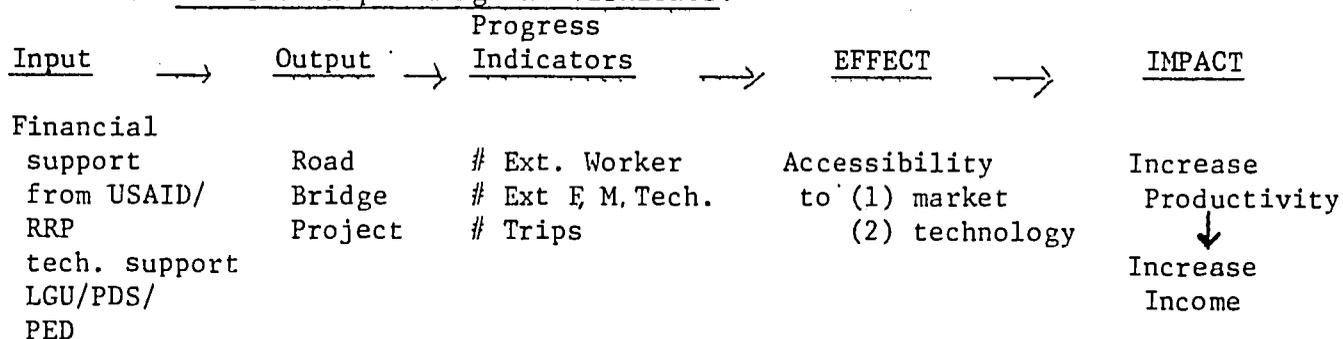
2. Hypothesis of the Study:

The presence of the road would increase production of major crops due to access to market, inducing visits by extension workers that provides the technique of the modern farming, etc. which will lead to increase in income and improve the level of living of farmers in the road influence area.

3. Basic Relationship:



4. Relationships Among the Variables:



IV. Methodology:

1. Evaluation/Research Design

Before and After with Control Groups (non-equiva) Time Series

	<u>BEFORE</u>		<u>AFTER</u>
With Road	0	x	0, 0 ₂ 0 ₃
W/out Road	0		0, 0 ₂ 0 ₃

2. Sampling:

One penetration road - with improvement (Experimental Group)

One penetration road - without improvement (Control Group).

3. Units of Observation & Analysis:

The household heads composed of farmers or fishermen engaged in farming/fishing or other farming activities within the road influence area of the road project.

4. Statistical Methods & Analysis:

1. Test for non-equivalent group
2. Calculating the confidence limits for the difference between two means
3. Computation of relative effects
4. Descriptive analysis

V. Data Generation Plan:

1. Secondary data from the local government units concerned will be used. Since 30% of the total household of the road influence area were surveyed before and after the road construction, it is planned to use only 50% of the sample survey of the above-mentioned sampling.
2. To supplement item (1) above, site visits and interviews with household heads will be conducted.

VI. Dummy Tables for Study:

1. Roads and Productivity
Controlling For Farm Size

		<u>Farm Size</u>					
		<u>Small</u>		<u>Medium</u>		<u>Large</u>	
		Road Present					
		<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>
	<u>Low</u>						
Productivity	<u>Medium</u>						
Growth	<u>High</u>						

2. Roads and Farm Income
Controlling For Extension Services

		<u>Extension Visit Frequency</u>					
		<u>Low</u>		<u>Medium</u>		<u>Large</u>	
		<u>Road Improved</u>					
		<u>Before</u>	<u>After</u>	<u>Before</u>	<u>After</u>	<u>Before</u>	<u>After</u>
Farm Income	<u>Low</u>						
Growth	<u>High</u>						

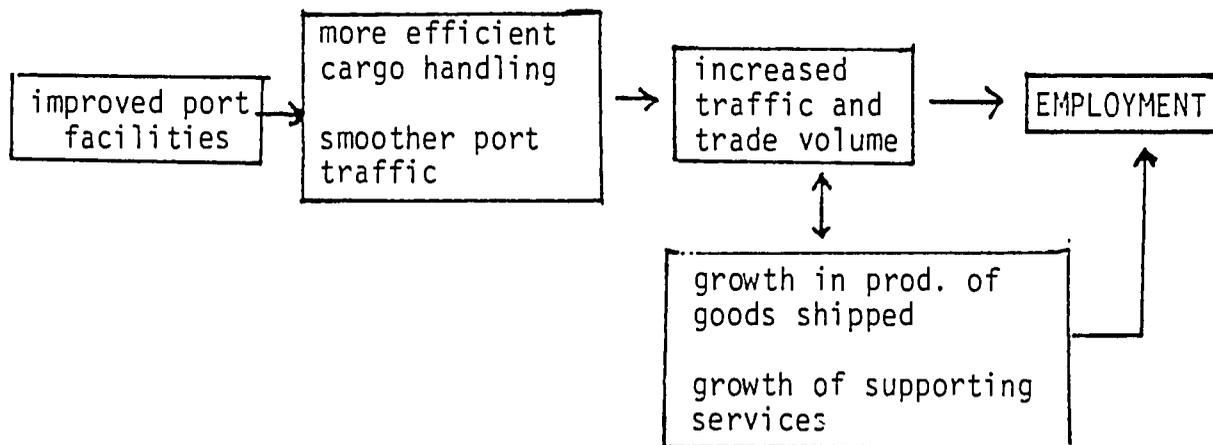
THE IMPACT OF GENERAL SANTOS PORT

by Beda Tumampos

This study aims to find out the impact of General Santos Port Development Project on employment, productivity and balance of trade.

The immediate effects of improved port facilities are in the form of more efficient cargo handling and smoother port traffic. These in turn generate more traffic and trade volume which will directly and indirectly affect various economic and social concerns.

Port development and Employment

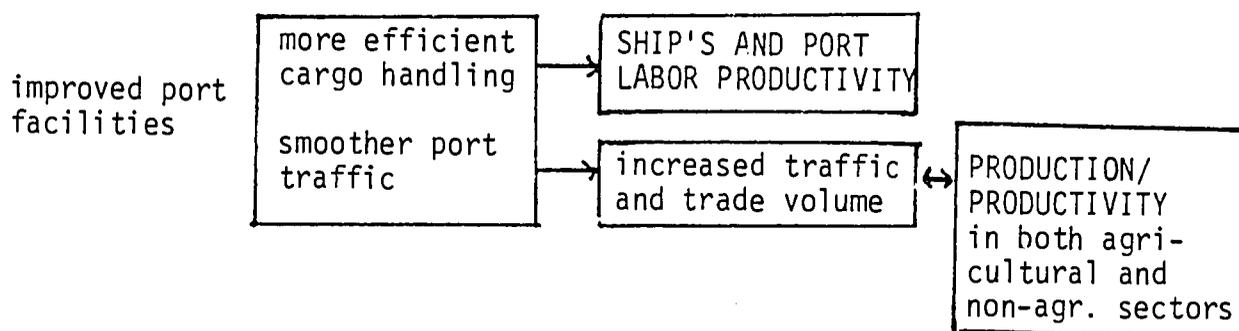


Port development has both direct and indirect effects on employment. The direct employment effect arises from increased traffic and trade volume which calls for more workers in the port. The indirect effect would arise from the growth in industries and sprouting of supporting services. Since a port is only a service facility and it cannot by itself create commerce, then it is impossible to quantify how much of the indirect employment increase is due to port expansion.

The indicators are as follows;

- Number of persons employed in port and port related activities from 1976-1980 by type of work.
- Employment in industries producing traded goods by type of work.

Port Development and Productivity.



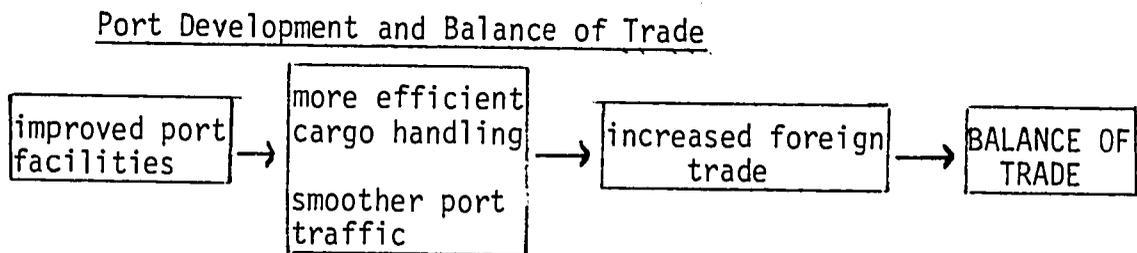
The direct productivity effect of port development can be measured on the ship's productivity as well as port labor productivity. With improved port facilities, ship's waiting time is reduced, thus reducing its turn-around time at port. This would mean savings in energy and maintenance cost on the part of the ship owners. Discharging/loading activities could be more efficient if vessels are docked properly and movement of cargoes in the port area is smoother resulting in better productivity on the part of the arrastre and stevedoring workers.

Indicators for ship/labor productivity:

- Average waiting time
- Average turn-around time
- Average working time per vessel
- Average number of laborers per day
- Average number of laborers per vessel
- Idle time of ship
- Average capacity of ship
- Tonnage handled per man hour

- Idle time of labor
- Frequency of arrival/dep of vessels
- Frequency of double-banking vessels
- Berth Occupancy Rate

If port development is successful in inducing new commerce and stimulating growth in new business and industrial opportunities, production in both agricultural and non-agricultural sectors may rise. However, production increase in these sectors are affected by several factors that the link with port development is remote compared to other factors.



The improvement of port facilities will encourage more foreign ships to call which stimulates exports. Indicators:

- Proportion of export carried out through General Santos port to the total exports of the Philippines
- Proportion of imports entering through the port of General Santos to the total imports of the country.

Data Acquisition Plan. The researcher will utilize data that are available at the Phil. Ports Authority, both at the head office and at the management units of Cagayan de Oro and General Santos, arrastre and stevedoring operators, pilot associations, and shipping companies. From the secondary data available, the researcher will determine the shippers of the commodities with significant changes (the first ten commodities w/the biggest changes) from 1976-1980 as well as the first ten commodities. These shippers will be interviewed using the following questionnaire.

1. Shipper _____ Commodity _____
2. Average value/Wt. of cargo shipped per month _____
3. Since when have you been trading goods to other islands/provinces? _____
4. When did you start shipping your goods through General Santos port? _____
5. After the completion of the port (1978) have you increased your
investment _____
production _____
employment _____
shipment _____
6. Do you think the increase (decrease) in No. 5 could be attributed to the port expansion? _____
7. What percent of your total production is shipped out through this port? Before expansion _____ After Expansion _____
Why? _____
8. Who are your trading partners?
Before expansion _____ After expansion _____

9. If there is change of trading partners, why? _____
Does it have anything to do with the port? _____
10. What percent of your labor force is from Gen. Santos? _____
11. What percent of your labor force is
unskilled labor _____
technicians _____
management _____

For new firms:

12. Size of firm (no. of employees) _____

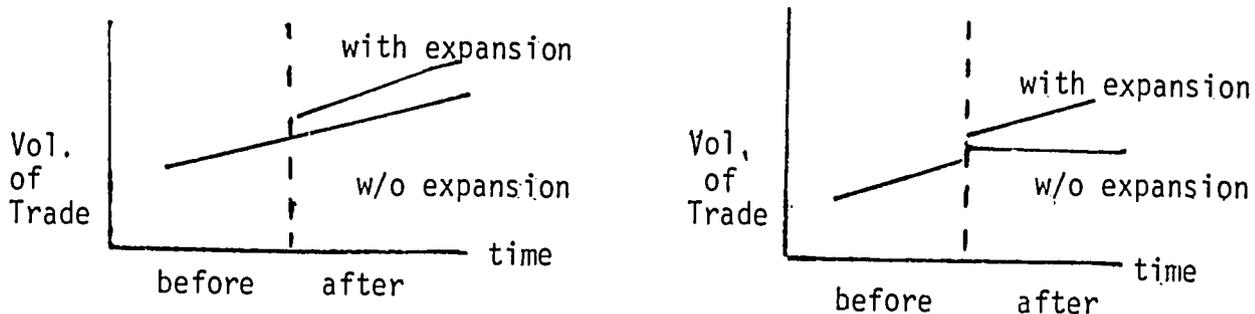
13. Capitalization _____

Method of Analysis

This study will use the before-after method of analyzing the data available to test the following hypotheses:

1. Port development is expected to generate a positive impact on employment.
2. Port development is expected to lead to an increase in foreign trade.
3. Port development is expected to lead to improved ship's and port labor productivity and production/productivity in the agricultural as well as non-agricultural sector.

To find the impact, data before and after will be compared and the difference between the two can be attributed to the port expansion. The growth that could have occurred in the absence of the port expansion will be estimated and this will be compared to the actual volume after the expansion. Since the Port of General Santos was already virtually congested, prior to the first expansion, the reason why it was the top priority in the country's port development, then it would not be unrealistic to assume that the difference between the before and after is attributed to the port expansion. This can be represented graphically by the following.



Secondary data from 1976-1980 will be used to analyze the quantitative impact of the port expansion. The data for 1976 and 1977 will be the before project data while that of 1979 and 1980 will be the after project data. Since the turn over of the completed portions of the wharf was done one after the other during the different months of 1978, then 1978 will be made the base year.

The indirect impact on employment and productivity will be described based on the survey that will be conducted among the shippers of commodities with significant changes and shippers of the first ten commodities handled by the port.

FOREIGN TRADE

Port of General Santos

in percent and metric tons

Commodity	1976	1977	1978	1979	1980
1. Total Imports	100	100	100	100	100
	()	()	()	()	()

2. Total Exports	100	100	100	100	100
	()	()	()	()	()

SHIPPING TRAFFIC
GENERAL SANTOS PORT
1976 - 1980

Particulars	1976	1977	1978	1979	1980
No. of Shipcalls					
Domestic					
Foreign					
Average GRT					
Domestic					
Foreign					
Average NRT					
Domestic					
Foreign					
Average Length					
Domestic					
Foreign					
Average Waiting Time					
Domestic					
Foreign					
Average Service Time					
Domestic					
Foreign					
Berth Occupancy Rate (%)					
No. of Double Banking Vessels					

Port of General Santos
AVERAGE VOLUME OF CARGO HANDLED PER VESSEL
(in metric tons)

<u>Year</u>	<u>Domestic</u>	<u>Foreign</u>	<u>Both</u>
1976			
1977			
1978			
1979			
1980			

INCIDENCE OF CONTAINERIZATION
Port of General Santos

<u>Year</u>	<u>Percent to Total</u>
1976	
1977	
1978	
1979	
1980	

DOMESTIC COMMODITY FLOW THRU GEN. SANTOS PORT

in percent and metric tons

Commodity	1976	1977	1978	1979	1980
1. Total Inbound	100%	100%	100%	100%	100%
	()	()	()	()	()

2. Total Outbound	100%	100%	100%	100%	100%
	()	()	()	()	()

THE SOCIO-ECONOMIC IMPACT OF THE
SAN ISIDRO IRRIGATION PROJECT

F. A. Conti

I. Introduction

For a fact, irrigation plays a vital role in the atricultural development in rice producing areas in the Philippines. It does not only increase and stabilize rice yields for a given technology but it also facilitates the development and diffusion of high yielding varieties (HYV's) with high levels of fertilizers application and other related inputs. In an area where farming is the main occupation and where rice is the staple food of the population but is plant:d only during wet season, the construction of an irrigation system has been considered a major factor primarily underlying the intensification of rice production.

II. Objective of the Study

The study will evaluate the impact of the San Isidro Irrigation Project as regards the employment generation in the project area in Carmen, Davao del Norte.

III. Hypothesis

With the operation of the irrigation facilities, it is anticipated that there will be a change in the farmers' cropping intensity, i.e., in lieu of the traditionally once a year cropping, it would then be twice a year cropping. Also, it is expected that with available water thru irrigation, the farmers could now apply improved technology like chemicals (herbicides, pesticides

and fertilizers) which the farmers did not much, if not at all, practice before due to the high risk that the farmers often face in the absence of assured water supply. The establishment of the San Isidro Irrigation Project leads to a positive effect in rice production as a result of double cropping of palay and a corresponding increase in crop yield. This also lead to a positive change in employment pattern in the farming area in the municipality.

A schematic diagram of the flow of the relationships of the variables is presented in Figure 1.

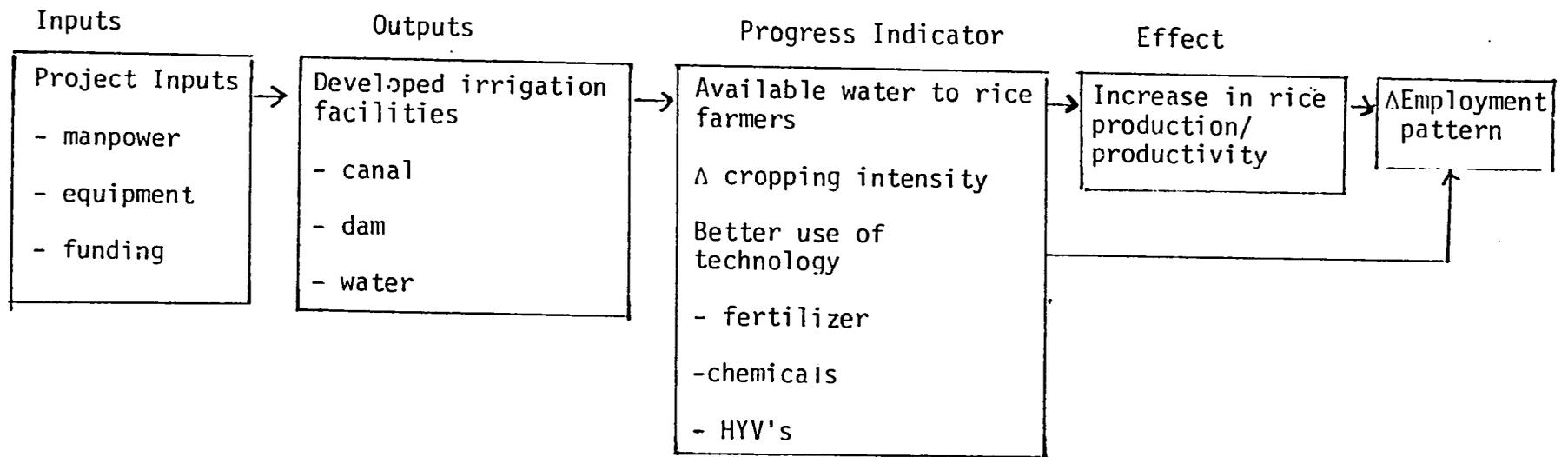
This relationship suggest an intervening variable involving the utilization of agricultural inputs, credits, and services. It is from here that the following hypothesis has been derived. The higher the degree of utilization of inputs, credits and services, the more likely will there be higher rate of employment.

IV. Variables and Indicators

As could be gleaned from the diagram, the variables involved in this study are: allocation of irrigation facilities (San Isidro Irrigation Project) as independent variable, utilization of credit, agricultural inputs and extension services as intervening variables and increase in agricultural production/ productivity and employment as dependent variables.

The independent variable will be measured by the level of water given as to whether it is adequate or inadequate, the number of farmers benefited during wet and dry season by farm size. The utilization of credit, agricultural input and extension services as intervening will be measured by the amount of credit utilized by the number and type of farmers, amount of inputs (HYV seeds, fertilizers, pesticides and herbicides) used and frequency of visits of

Figure 1. Flowchart of the relationship of input to impact of the San Isidro Irrigation Project



extension workers. The dependent variable will be measured by the rate of increase in agricultural production, increases in the total mandays employed by tasks and by farm size, and the wages received by the farm laborers.

Variables

<u>I. Independent Variable</u>	<u>Indicators</u>
Irrigation facility	availability of water supply
<u>2. Intervening variable</u>	
Utilization of:	
1. Inputs (HYV's seeds, fertilizers, herbicides, pesticides)	1. Amount used by farmers 2. Inputs used by tenurial status of farmers 3. Cost of input 4. Source
2. Credit facilities	1. Amount of credit used by farmer 2. Credit used by tenurial status 3. Cost 4. Source
3. Extension services	1. Frequency of visits 2. Number and types of farmers visited
<u>3. Dependent variables</u>	
1. Increase in agricultural production/productivity	1. Percentage increase in agricultural production 2. Increase in agricultural productivity

89

2. Employment

1. Number of laborers required for a certain kind of farm activity per cropping season per farm size by sex
2. Increase in the total number of man-days per farm size per farm task per season
3. Wages

V. Data Acquisition Plan

Inasmuch as the study covers a period of only six weeks from January 15 and considering other assignments that the researcher expects to do as soon as she gets back to the office, the study will utilize secondary data available from the Office of the National Irrigation Administration, Ministry of Agriculture, the National Census and Statistics Office, the National Economic and Development Authority and the Farm Systems Development Corporation. Some primary data will also have to be gathered. This will consist of ocular inspection of the project site and personal interviews of the farmers in the area. A proposed questionnaire will be developed to capture the indicators required.

VI. Method of Analysis

The unit of analysis that will be used in the study is the individual farmer.

The study considers a Before and After with control group design. This will discuss whether the employment effect of irrigation arises from the increase in the number of man-days per cropping season as a result of the intervening variables, and the shift of the family member working for other employment to family rice farm, or increase in hired labor coming in to the area.

Sample Table

Table 1. Total employment by man-days, by type of labor, irrigated and non-irrigated areas by cropping season and by farm tasks.

IRRIGATED Farm Tasks	Family labor		Hired labor		Exchange labor		Total
	Wet	Dry	Wet	Dry	Wet	Dry	
land preparation							
transplanting							
fertilizer application							
weeding							
chemical application							
harvesting							
post harvest							
NON-IRRIGATED Farm Tasks	Family labor		Hired labor		Exchange labor		Total
	Wet	Dry	Wet	Dry	Wet	Dry	
land preparation							
fertilizer application							
weeding							
chemical application							
harvesting							
post harvest							

Sample Tables

Table 2. Relationship between production and employment.

Irrigated		Non-irrigated	
Production			
Low	High	Low	High

Employment

Low

High

A STUDY OF THE IMPACT OF THE POPULATION
PROGRAM ON FEMALE LABOR FORCE
PARTICIPATION IN CEBU PROVINCE

by Sandra V. Manuel

The Research Issue

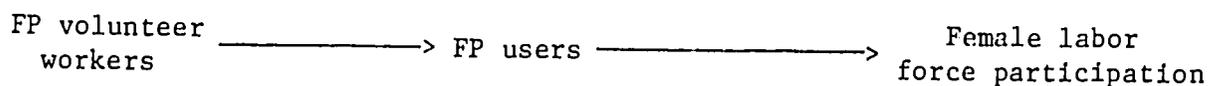
It has been demonstrated by several studies that female employment is negatively associated with contraceptive practice (Micro and Mertens, 1968; Cook and Leoprapai, 1977). However, the pattern doesn't seem to apply to all developing countries. Of interest in this paper is the relationship between contraceptive use and female labor participation in the province of Cebu, an island in the center of the Philippine archipelago.

While it may be hypothesized that female employment depresses fertility, thereby causing an increase in contraceptive practice, the reverse could also be argued. The active promotion of a government population program and the availability of contraceptives could influence women to adopt family planning. Adoption of contraception may in turn influence female labor participation, because it is possible that women with smaller families could be more attracted to work since they have more time and fewer constraints to work.

More specifically, the study hypothesizes that:

1. The number of program workers (in this case, barangay volunteer workers) as a program input is positively associated with contraceptive use;
2. In turn, contraceptive use is positively associated with female labor force participation.

The relationship can be diagrammed thus:



Data

The research study will focus on the municipality as the unit of analysis. Municipal data are essential for studying variations in women's labor force behavior among varying degrees of contraceptive use prevalence (which may range from 30% to 60% in the more than 50 municipalities of Cebu).

The 1980 census provides data on female labor force participation for all municipalities. Data on the number of barangay volunteer workers (commonly referred to as Barangay Service Point Officers) and family planning users by municipality are also available for 1980 from POPCom records.

Data Analysis

In order to deal with the confounding effects of differing population size, the three major variables in the study will be expressed as a percentage of the municipal population, i.e., proportion of FP volunteer workers to the municipal population, proportion of FP users to the municipal population (otherwise known as FP prevalence rate). The labor force participation rate of women, as used in this study, will be calculated by dividing the number of women in the labor force by the municipal population.

Furthermore, to rule out other alternative explanations, the study will attempt to control for certain variables. It has been established that female labor force participation is influenced by several factors such as the opportunity structure of urban/rural job markets, attitudes toward women's roles, inflation and the family's purchasing power, and women's education.

Given only the 1980 census data, the study will control for urban population, agricultural population, class of municipality based on income, and mean female educational attainment. In other words, the study will examine whether the hypothesized relationship between contraceptive use and female labor force participation will still persist across the different categories (high, medium and low) of percent urban population, across high,

medium or low categories of percent agricultural population, across the five income classes of municipalities, and across high, medium or low mean female educational attainment. (Refer to summary tables). Partial correlation coefficients will also be computed to find out the degree of association between FP use and female labor force participation rates while removing, in essence, the effects of other explanatory variables.

Summary Tables

		1. Female Labor Force Part'n		
		H	M	L
% agricultural population	H	H		
		M		
		L		
		FP		
	M	Prevalence	H	
			M	
		L		
		Rate		
	L	H		
		M		
		L		
		2. Female Labor Force Part'n		
		H	M	L
% urban population	H	H		
		M		
		L		
		FP		
	M	Prevalence	H	
			M	
		L		
		Rate		
	L	H		
		M		
		L		
		3. Female Labor Force Part'n		
		H	M	L
Income class of Municipality	A	H		
		M		
		L		
		FP		
	B	Prevalence	H	
			M	
			L	
			Rate	
	C	Prevalence	H	
			M	
			L	
			Rate	
D	Prevalence	H		
		M		
		L		
		Rate		
E	Prevalence	H		
		M		
		L		
		Rate		

Summary Tables (continued)

4. Female Labor Force Participation

		H	M	L
	H	H		
		M		
		L		
	FP			
Mean Female Education	M	H		
		M		
		L		
	Prevalence			
	Rate			
	L	H		
		M		
		L		

5. %FP Volunteer Workers

		H	M	L
	H	H		
		M		
		L		
	FP			
Mean length of Service of Barangay Workers	M	H		
		M		
		L		
	Pervallence			
	Rate			
	L	H		
		M		
		L		

AN EVALUATION ON THE IMPACT OF THE COLD STORAGE PROJECT
TO THE INCOME PROFILE OF THE FISHERMEN
IN MASINLOC, ZAMBALES, PHILIPPINES

by

H. T. Barrios

I. INTRODUCTION

The Philippines has established itself as one of the countries with abundant and rich fishing grounds. The archipelago is also characterized by a good length of coastlines and a host of municipalities situated along the sea coast. Fishing, therefore, has been a primary source of livelihood among the households in those such municipalities. It is in this concern that the government is putting in a considerable resource investment to augment and strengthen the fisherman's cause; among which is the establishment of capital projects related to fishing such as a cold storage plant.

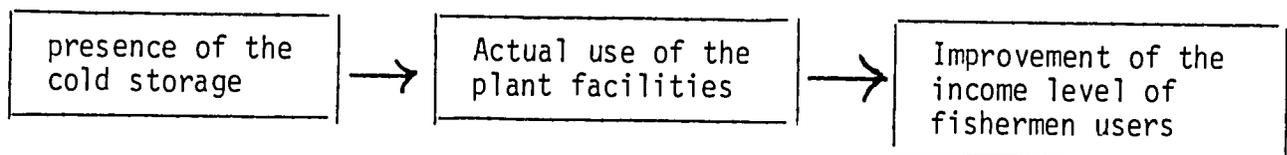
The project was conceived by the joint effort of the Bureau of Fisheries and Aquatic Resources and fishing communities of the province of Zambales, through their local government activities. The choice of the municipality as the project site was a result of a selection procedure that is internal to the agency and in concurrence with the provincial development plan. The cold storage was constructed under the supervision of BFAR as the lead agency or project proponent and in coordination with the Ministry of Public Works regional office in Central Luzon. The project is basically intended to result to increased fish production in the area, w/c would eventually be equated to mean increased income to the fishermen.

II. STATEMENT OF RELATIONSHIPS

The purpose of this evaluation study is to come up with analytical interpretations of the project's impact on the income profile of the fishermen in the municipality. The operationalization of this study revolves on several assumed relationships. They are:

1. that there is an increase in the fishermen's income as a result of their usage of the storage facilities.
2. that there has been an increase in production as an indirect consequence of the project.
3. that the project has stabilized the fish market system¹, and
4. that the cold storage project benefits the municipality in general.

The above-stated relationships could best be summed up in a general statement--the change in the income profile of the fishermen in Masinloc is an indirect effect of the establishment of the cold storage project. A simple casual framework on the income impact of the cold storage project is presented as:



A further explanation to this casual relationship follows--there is a need to determine the incremental increase on price differential in real terms between the fishermen's usage of the facilities now and their inavailability before as regards their fish catch excess disposition. This will have to be done at the four fishermen categories in order to establish some concrete findings as to who really benefits from the usage of the facilities. Such will then be correlated to any observable fishermen's behavioral changes in commodity disposal as a means to realize increased income.

¹Stabilized fish market system being referred to here means the reasonable disposition price on the waterfront of the fishermen's catch to the commodity buyer which is characterized as relatively insusceptible to severe price fluctuation. Such, however, does not hold true at the consuming sector and is therefore excluded in this concern.

III. VARIABLES AND INDICATORS

This study will center on income as the primary dependent variable, while prices of fish and facilities usage will be considered here as the independent variables. Production or yield will be treated as a determinant of these two independent variables while demand is considered or assumed to be a constant.

IV. DATA ACQUISITION PLAN

Pertinent data sources for this study would include:

- a) municipal census figure, demography NCSO
- b) municipal socio-economic profile - Mun. SEP
- c) income distribution/fishermen categorization
- d) project study information - BFAR
- e) barangay level info . - baseline info.

Other data requirements: (Primary Survey)

1. allocation of fish yield by weight and percentages
2. commodity flow
3. production cost
4. fish market pricing

Fishermen categorization will have to be done through an accepted common basis. This will distinguish one from another by means of fishing gear/equipment ownership by size and number, capitalization; taxes, dues and fees paid, and income bracket. It is intended here to come up with four categorization namely:

1. small/traditional fisherman
2. middle-type fisherman
3. big-time fisherman; and
4. part-time fisherman.²

A minimum property ownership level will be established for each of the above categories.

²

special category to mean occasional fishermen.

On Facility Usage and Commodity Flow. Information regarding these can be extracted from BFAR Plant Operations report w/c could be termed as quasi-primary data in nature. The frequency and the nature of the usage can also be established here (By whom? How much?)

On Pricing Information. This could be extracted by gathering secondary data from BFAR, MI-TAC and other government-related entities. For periods where it is not possible to be obtained, a recall questionnaire would be resorted to all and the respondents could very well be the fishermen themselves or the fish vendors.

Data on previous periods if not available could be extrapolated and/or by personal interview to respondents so as to come up with a qualification of items of importance.

On Production Allocation. Information in this regard will have to be extracted through a survey on the fishermen's actual disposition of yield. Questions on this will be included in the proposed questionnaire.

V. METHODS OF ANALYSIS

The single group time series design will be used by the researcher in this study wherein the group being referred to here are the fishermen as a class by themselves before and after the project implementation. By this approach, drop outs and new entries will be treated as non-determinants (at this point, the researcher is considering this as a working assumption. In the field level, however, this item will be looked into considerably. It is suggested here that if the aggregate sum of dropouts and new entrants exceeds one-third of the total i.e. 33 percent, in one time measure, then it will be considered significant and hence will require modifications in the methodology presented), meaning that they would be treated as non-affecting factors in the analysis. The unit of observation will be the fishermen as a working category/class and the unit of analysis will be individual fishermen himself.

Time series graphs will be required to picture out approximately the pattern of development in this regard before the computational analysis will have to be undertaken to further explain such behavior.

Assumptions: 1) That the demand function applies uniformly among the four fishermen categories.

2) That the variables have linear relationship.

3) That there is to be no two-way causation among or between variables.

In the statistical operations, correlation, cross-tabulation, significance test OLS (regression), etc. would be utilized depending on w/c method would apply to a particular analysis.

Table 1. Average yield by fishermen category (in metric ton per annum)

	L O W				H I G H			
	Small Time	Part Time	Middle Year	Big Time	Small Time	Part Time	Middle Year	Big Time
Before								
After								

97

AN ANALYSIS OF THE IMPACT OF THE CASSAVA
PROCESSING PLANT IN TALAKAG, BUKIDNON

An Impact Research Proposal by
Fernando C. Fajardo

Introduction

In spite of the country's long established policy of industrialization, the Philippine economy is still characterized by overdependence in agriculture both as a source of employment and income to majority of its people. Up to now and except in certain areas of the country the benefits of industrialization have never been felt significantly by the people in rural areas. Given a rapidly increasing population and the corresponding pressure that it brings on land, the situation leads to premature movement of people from the rural areas to urban centers in the country, adding more fuel to an already existing urbanization problem.

One response that the government had made to this problem is the promotion of country side development. The program seeks to improve rural living by supporting the development of agriculture in the countryside along with the promotion of rural industries.

One such undertaking which fits well along the above scheme is the establishment of a cassava processing plant in Talakag, Bukidnon, a rural community. The plant is a private venture which processes cassava into starch and related products. The plant is located right in one of the barrios in Talakag, Bukidnon, which has all the characteristics of a rural community.

Firm-Community Relationship

Theoretically, the relationship between the processing plant (firm) and the community where it is located is shown in Figure 1.

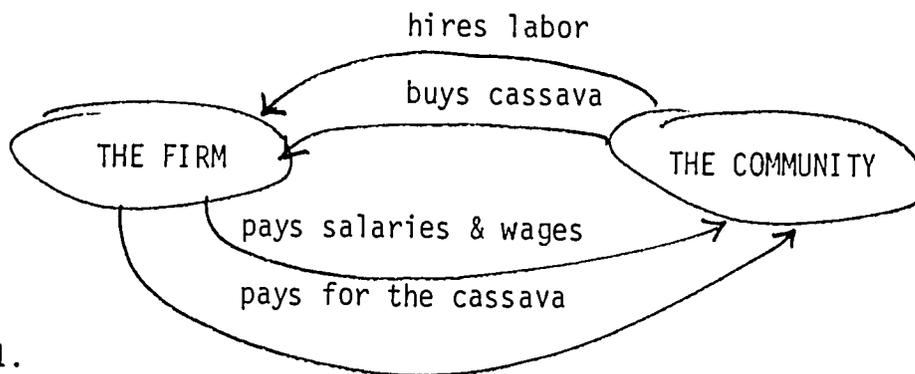


Figure 1.

The upper loop shows the flow of goods and services that the community provides to the firm. These are in terms of labor directly needed by the firm for its operation, and cassava as raw materials for processing into starch. The lower loop shows the income flows from the firm to the community. These are in the form of payments for salaries and wages, and payments for cassava purchases. The plant site may either be rented or bought by the company owners from the previous owners in the community. If bought, which is usually the case in the Philippines, then the transaction would be a one-shot deal; hence the relationship is not continuing and no longer shown in Figure 1.

Cassava is not grown by the plant's owners but by the farmers in the surrounding community. Supply to the processing plant is procured either on a contract basis with the farmers or in the free market. Hired labor on the other hand is expected to come from the community especially the unskilled ones. This system provides for a symbiotic relationship between the firm and its surrounding community.

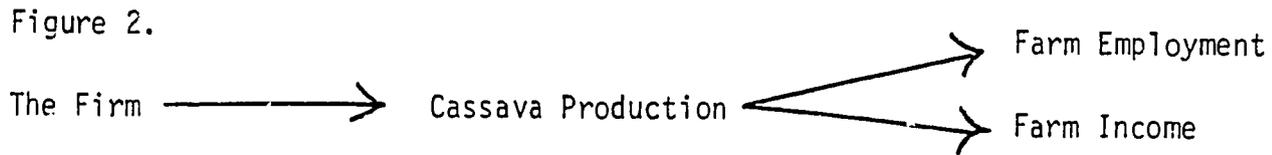
The Project's Impact--A Hypothesis

While the project is purely private in nature with profits as the main motivation of its owners, the presence of the cassava processing plant is believed to have a strong impact on the community.

In specific terms, the following hypotheses are advanced in this study:

1. The presence of the cassava processing plant leads to an increase in cassava production in the firm's influence area;
2. That an increase in cassava production leads to an increase in income and employment level of the cassava growing community where the firm is located;
3. That it is the community residents of Talakag who are benefited from the project's impact.

Figure 2 shows the conceptual framework of the hypotheses presented above.



Cassava production is firstly determined by the demand of the firm for cassava which should not exceed its processing capacity. The complexity and cost of cassava production finally determine the actual volume that cassava growers will produce to sell to the firm. The actual volume of cassava production will in turn influence the level of farm employment and income. Hypothetically, cassava production is the dependent variable while farm employment and income are the independent variables.

Objectives of the Study

The study will seek to discuss the actual impact of the cassava processing plant in the rural community of Talakag Bukidnon.

Based on the foregoing hypotheses, the study will seek to answer the following questions:

1. Has there been any remarkable increase in cassava production in the firm's influence area after its establishment?
2. Has there been significant increases in farm employment and income in the firm's influence area as a result of increase cassava production?
3. Who actually gets the benefits of increase cassava production, farm employment and income?
4. Do the people in the community feel that they are better off now with the establishment of the firm than before?

Questions number (1) and (2) implies that cassava production and consequently, farm employment and income may have increased even without the presence of the firm. Such possibility has to be examined also. The other implication is that cassava production may have increased but at the expense of other crops such as food and other commercial crops, thus rendering the firm ineffective as far as bringing actual increase in economic activity in the area.

Question number (3) also implies that the benefits of increase employment and income may not necessarily largely accrue to the residents of Talakag. This may happen for example when the newly opened cassava farms are owned by people residing in the urban area of Cagayan de Oro which is located just 15-20 km away from the project site. Even the laborers of the processing plants may not necessarily come from Talakag originally.

Finally question number (4) may also reveal that even without the cassava processing plant, the community's condition may just have improved or worsened, as the case may be, depending on the actual general condition of the economy of the country.

Design of the Study and Method of Analysis

This study is practically a case study method since what is going to be studied is already there. Then there is a problem of finding a control community whose actual conditions are similar to Talakag. For purposes of comparison however a way will be found out to reconstruct the actual condition of Talakag with respect to the variables being considered in the study prior to the establishment of the cassava processing plant. This reconstructed condition will be compared with the condition after the project have been established in the area. Barring any other major development undertaking in the area, any significant difference between the conditions before and after the project will be construed as resulting from the presence of the cassava processing plant.

The usual measures of central tendencies and dispersion will be greatly used in the study with the application of certain tests to determine the significance of the difference between the conditions before and after the project.

Other method of analysis will be applied whenever allowed by actual data availability and as needed to examine certain relationships between variables such as between production, income and employment.

Data Gathering Method and Sources of Data

Data gathered will be from three levels--the farm, the firm and the community.

At the farm level data will be gathered about the characteristics of both the farmer and his farm with a focus on conditions before and after the cassava processing plant had been established.

At the firm level the data to be gathered will be about its purchaser and suppliers of cassava and other pertinent data relative to its operation such as employment, processing capacity, method of procurement of supply of cassava, assistance given to cassava growers and other related information.

Data at the community level will be needed to determine the general condition of the community before and after the project had been established. Data sources will be from the records of government agencies operating in the area, including those that are compiled by the Municipal government and taken by the census office about the Municipality of Talakag.

Period of Study

The study will be undertaken for a period of six (6) weeks from January 15 to February 28, 1982 which is covered under module 5 of the training on Impact Analysis of Development Projects conducted by the NEDA ESIA-WID Project and the East-West Center's Resource Systems Institute.

Data gathering and analysis will be done during the first four (4) weeks while final report writing will be done during the next two (2) weeks. The final report will be presented in Manila, Philippines as part of the requirements of the training course on impact analysis.

A CASE STUDY PROPOSAL FOR THE DAVAO CITY WATER DISTRICT

Daniilo L. Gil

Introduction

The proposal is different from the regular proposal of impact assessment due to the constraint of time and the present need of evaluating the rate policy if it is affecting the targeted beneficiaries of the organization. The next reason why I chose to do this is due to the existence already of the impact assessment made by ESIA/WID in Davao City and some results indicate that there is a need to make a closer look at the usage of water and the factors affecting it to fully realize some impact of the water works project in Davao City.

The rate policy of Davao City Water District (DCWD) started with the general guidelines prepared and circulated by the Local Water Utilities Administration (LWUA) to adopt a uniform pricing of water for the water Districts of the Philippines. In compliance to the requirements of rate review powers of LWUA, DCWD prepared and adopted the rate guidelines. The (2) two agencies have direct relationship with regards to rates. DCWD is run by a 5-man Board of Directors who makes policy and implemented by the General Manager and Staff. Per Presidential Decree (PD) 198, it is a Quasi Public Corporation granted the privileges of a private corporation. To date it serves 16,000 households and business establishments in Davao City and has a potential of connecting 50,000 households in the poblacion.

The rate policy of DCWD is classified based on usage and size of connection. The major usage classification are Residential or Domestic, Commercial and Industrial, Bulk or Wholesale. The size of connection ranges from 3/8" diameter pipe to 2" diameter. It has two particular charges called Service or Minimum Charge--this is fix amount charge on a particular size of

connection. The bigger the pipe the higher the service charge, the other is the Commodity Charge--a variable amount dependent on the consumption in excess of the intitlement of the service charge. The Commercial and Industrial pays double the Residential Rates while the Bulk or Wholesellers pays (3) times the Residential Rates. The target beneficiaries of the rate subsidy is the low income group defined in the policy as those whose earnings are below P350.00 per month, has (2) two faucets or outlets only, and consumes not more than (15) fifteen cubic meters.

Review of the Basic Guidelines given by LWUA:

1. Usage of Revenue Unit Concept
2. Subsidy of the Low Income Group
3. Charges classification
4. The Financial Requirements of the utility include (Debt service, operation and maintenance cost, depreciation, capital expansion reserve, and a margin not to exceed 12%)
5. Requirement of 5-year financial review and (10) ten year projection plan.
6. Table of conversion of size of connection and flow of water relationship

The Water District then passed at Board Resolution for the adoption of rates and its corresponding Collection Enforcement Plan. The program is basically delinquency schedules.

Reconnection Charges

And Plan to eliminate large Accounts Receivables

The proposal would like to consider in the project the relationship between the DCWD, an agency that provides safe and potable water, and the Water Users or Beneficiaries.



TIME					
1			2		
0	0	X	0	0	0
1974	1975	1976	1977	1978	1979

It is said that water is a basic necessity. Therefore, the researcher doesn't need to establish the complex relationship of the supplier and the consumer. However, to satisfy the need to prove it statistically, we can do a time series analysis before and after the project taking into consideration the total water production and consumption for a period of time.

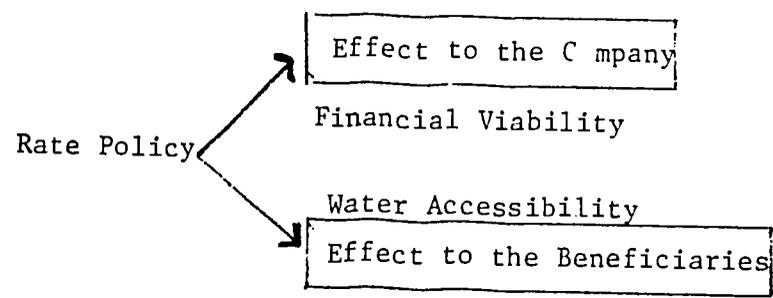
It is expected by the researcher that there would be an increase in production and consumption. This study however, would like to stress its interest of looking into the beneficiaries and answer the following questions that interest most policy makers.

1. WHO GETS THE WATER SUPPLIED? and maybe answer
2. WHY?
3. WHAT SHOULD WE DO?

This study would like to look specifically to the income of the beneficiaries and break them down into the Low, Middle, High income brackets. This will further be split to three more categories per bracket to really see closely the income structure of beneficiaries. It is also the desire of the researcher to know how many users belong to the Low, Middle and High income groups.

The next thing this case would look is the number of Low, Middle, and High income user and compare them to the average consumption to know who consumes more. Since we wanted to show the policy-makers that this study is interested on the rate policy, we would like to compare the income of beneficiaries, consumption and billings and then inter-relate the results to know who pays less or more. At this point, we might be able to answer several things that policy-makers question such as HOW MUCH IS THE EFFECTIVE RATE OF

WATER TO THE LOW, MIDDLE, AND HIGH INCOME GROUP? WHO PAYS MORE? IS THE INTENDED SUBSIDY FOR THE LOW INCOME GROUP REALIZED? As for the question, WHY? the researcher would be dealing with the rate policy diagram below:



With the time allotted is only 6 weeks, it is only proper that we confine our study to the effect on the beneficiaries as a first report and then pursue the more critical issue of the effect to the company.



This study would like also to look into specific data available in Davao City that gives the percentage of disposable income that can be spent for water to check if this has significant difference with the percentage of income beneficiaries are actually spending. The unit of measure of this study will be the household and our sources of data will come from the records of Davao City Water District (Billings, Production, Consumption and other related datas such as Financial Reports), Survey of Ateneo de Davao Social Science Department for the ESIA/WID micro component. Other studies related from the following agencies: Regional Cities Development Project, Slum Improvement and Resettlement, Davao City Planning Office, Davao City Action Center with particular interest to Dr. Hackenburg's study.

This study will make a 20% random sample of the connectors of DCWD in the 20 zones existing and make use of the data in income, consumption and billings.

The data will come direct from the customers ledgers and the income from the Household Served done by DCWD. The following table will be used.

Table 1
Actual Condition

(N)	Group of Household	Consumption Ave. Cu. M	Average Billings	Unit/ Cost	Other surveys and Data relevant
Low	Low Middle High				
Middle	Low Middle High				
High	Low Middle High				
			Σ = Total Revenue		

Table II will be the simulated results for comparison to the actual
The more conditions simulated the more Table II will be made.

RESEARCH DESIGN FOR EVALUATING THE IMPACT OF THE CONTINUING EDUCATION OF
TEACHERS (CET) COMPONENT OF THE COMMUNICATION TECHNOLOGY (COMTECH) PROJECT

by Thelma Cruz

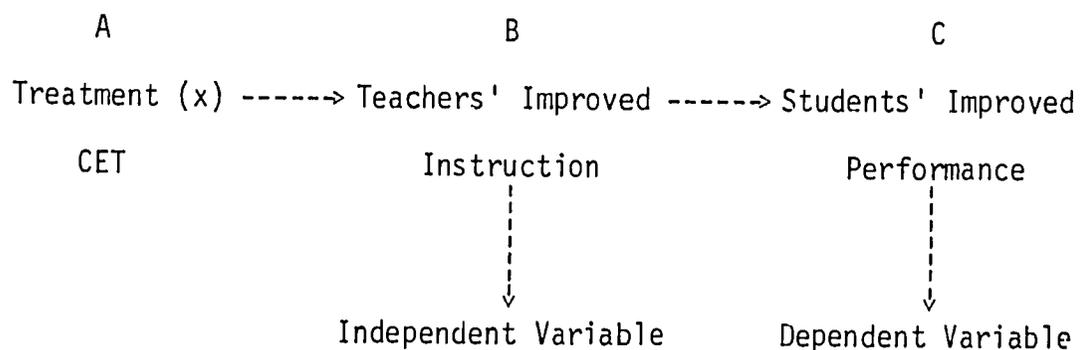
I. Specification of Relationships

A. Research Problem: Does the Continuing Education of Teachers (CET) affect the learning level of all students regardless of their socio-economic levels?

B. Hypotheses of the Study:

1. That the CET improve the achievement level of the students in the combined science and mathematics subject area. Teachers who have undergone specific training programs such as that of the CET become a key factor in the improvement of the students' performance as they develop and utilize the needed competencies in teaching.
2. That the CET affect the learning level of all students regardless of their socio-economic levels.

C. Basic Relationship



D. Schematic Diagram Showing the Relationships among the Variables

A Inputs	B Outputs	C Progress Indicators	D Effects	E Impact Variables	
				1st order	2nd Order
GOP-FOREX (IBRD) Funds; manpower resources; consultants; materials & supplies	Stock & No. of radio progs./ materials; forum leaders' manual; teachers' workbooks; demo. lessons; slides, maps & charts; conduct of CET progs.----> trained teachers	Dissemination/Use of developed radio broadcasts/materials in the conduct of CET; No. of training progs. held per specific period; Total no. of progs. held; No. of teachers trained per session; Total no. of teachers trained	Improved Quality of Teachers' Instruction ↓ Content ↓ Methodology	Improved Students' Performance; Reduction of disparity in the achievement level of the students;	Education/ Literacy

1/13

E. Possible Intervening Variables Between B and C

1. teachers' turnover (not quite possible in public schools especially in the provinces)
2. variation in teachers' background
 - a. age/civil status/sex
 - b. educational attainment (undergraduate and graduate, etc.)
 - c. schools where degree (s) obtained
 - d. teaching experience (no. of years, specific grade levels and names of schools)
 - e. level of teaching position/present item
 - f. in-service training programs attended/participated in after the introduction of the CET
3. variation in students' background
 - a. age of students
 - b. I.Q. scores
 - c. parents' (principally the fathers') occupation
 - d. academic grades/periodical grades
 - e. size of family
 - f. place of residency (poblacion or rural)
 - g. media available at home
 - h. access to electricity at home
 - i. spoken dialect/language at home
4. variation in schools' background
 - a. school/intermediate faculty population
 - b. teacher/student ratio per intermediate class
 - c. no. and classification of nearby schools
 - d. location and classification of selected schools

- e. other resources made available to the school after the introduction of the CET

F. Indicators

- 1. test scores of students and teachers at two/several points in time on tests prepared and administered by the Evaluation Unit of the COMTECH Project (experimental and control groups)
- 2. increase in the average performance of the different classes in Science and Math
- 3. reduced disparity between the high and the low achievers

II. Methodology

A. Evaluation Design

- 1. pre-tests and post-tests with experimental and control (students and teachers) groups

(Grade 4) O_e pre-test	x	(Gr. 4) O_e post-test	(Gr. 5) O_e post-test
		(Gr. 6) O_e post-test	
(Grade 4) O_c pre-test*		(Gr. 4) O_c post-test	
(Grade 5) O_c pre-test*		(Gr. 5) O_c post-test	
(Grade 6) O_c pre-test*		(Gr. 6) O_c post-test	

*Pre-test will consist only of baseline data items and will be given to the different control groups at the inception of the evaluation study.

B. Sampling

- 1. two (2) rural schools and two (2) poblacion school (details of the sampling procedures will be firmed up only in Manila upon knowing the details in the selection of the participating schools)

C. Units of Observation and Analysis

- 1. students/classes
- 2. teachers

D. Statistical Methods

1. computation of mean scores
2. computation of differences of means
3. tests of significance
4. correlation coefficient/confidence limits
5. standard deviation and variance
6. computation of relative effects

III. Data Acquisition/Generation Plan

1. Use of Secondary Data

Majority if not all of the data needed to be generated by this study are available at EDPITAF since being a pilot project, the evaluation component of the project is given emphasis. It is therefore assumed that there are data available on scores on pre-tests and post-tests for experimental and control groups. Some data particularly on the school level can be generated from the schools.

2. Expected Data Available Either from EDPITAF and/or Schools

- a. names and no. of schools given the CET treatment only
- b. location/classification of these schools
- c. basic information on teachers per grade level per specialized area
- d. basic information on students' per grade level
- e. student/teacher ratio per class
- f. school/faculty population
- g. test scores on EDPITAF tests (pre-tests and post-tests)
- h. possible resources made available to the schools/students after the introduction of the CET
- i. possible additional trainings made available to the teachers after the introduction of the CET

- j. incidence of turn-over/transfer of teachers
- k. incidence of drop-outs among students
- 3. Conduct of site visits and interviews of key informants from EDPITAF and field level project implementors to supplement the secondary data
- 4. Should the list of information on teachers, students and the schools may not be readily available, simple surveys will be conducted.

a. Draft Survey Sheet for Students

Pangalan (Name) _____

Gulang/Idad (Age) _____

Paaralan (School) _____

Baitang at Seksiyon (Gr. & Section) _____

Ano ang hanapbuhay ng iyong ama? (What is the occupation of your father?) (if the more common jobs in the vicinity can be secured from EDPITAF, then this item would contain a list of these jobs and the students would just have to check the relevant item.

Saan kayo nakatira? (Where do you live?) _____

Ilan kayong magkakapatid? (How many children are there in the family?) _____

Pang-ilan ka sa magkakapatid? _____

Ano ang madalas ninyong ginagamit na pananalitaasa bahay? (What is the commonly used spoken dialect/language at home?) _____

Tagalog _____

Ilokano _____ Tagalog at Ilokano _____

Pangasinan _____ Tagalog at Pangasinan _____

Ilokano at Pangasinan _____ Ingles (English) _____

Lagyan ng marka ang patlang o mga patlang kung mayroon kayo sa inyong mga bahay ng mga bagay na nababanggit

Radyo _____ Magasin _____
Telebisyon _____ Telepono _____
Pahayagan _____ Transistor _____

Mayroon ba kayong elektrisidad/kuryente sa inyong mga bahay?

Mayroon _____ Wala _____

b. Draft Survey Sheet for Teachers

Name of Teacher _____

Age/Civil Status/Sex _____

Length of teaching experience at specific grade levels _____

How long have been teaching/handling this grade level? _____

What is your undergraduate degree and where did you obtain it? _____

Do you have masteral units and/or degree? _____ In what field?

_____ If unfinished, how many units have you earned? _____

What school are you enrolled in? _____

What is your present item? _____

Have you attended any form of in-service training programs after the CET has been introduced?

If yes, please list them below and indicate who sponsored it and where they were held? _____

c. Draft Survey Sheet for the School Administrators

Name of School _____

Location of School _____

School/ Faculty Population _____

Teacher/Student Ratio per class _____

Classification of School _____

Number of nearby schools and their respective classifications _____

Other resources made available to the school after the introduction of
CET _____

DUMMY TABLE 1

THE CET PROGRAM AND TEST SCORE
IMPROVEMENT CONTROLLING FOR OCCUPATION
OF CHILDREN'S FATHERS

CET PROGRAM SCHOOL

YES

NO

Father's Occupation

Ag

Profes

Other

Ag

Profes

Other

Low

Medium

High

Test
Score
Improvement

AN IMPACT ASSESSMENT RESEARCH PROPOSAL:
KABSAKA PILOT PROJECT, STA. BARBARA, ILOILO

by

Alexander Q. Valenciano

I. Project Background

The KABSAKA (Kabusugan sa Kaumhan) Project was originally a composite test project implemented in five (5) barangays of Sta. Barbara, Iloilo, which was jointly undertaken by the Ministry of Agriculture, the International Rice Research Institute, and the University of the Philippines at Los Banos. The acronym "KABSAKA" arose gradually as the feasibility on both agronomic/technical and economic aspects of the multiple cropping scheme as introduced in rainfed areas proved imminently successful within a short period of about three (3) years.

In light of the multiple cropping scheme, the rice-leafy/leguminous vegetable-rice crop mix was adapted, i.e., the first rice crop was planted between August and October, after which the same level will be planted with leafy or leguminous vegetable until about the middle of January. The second rice crop is planted at a time when the soil exhibits sufficient amount of moisture to warrant the growth of another crop.

It is precisely the introduction of planting at the right time and the whole compendium of cropping mix with supportive credit, extension and marketing that the project sought to bring about production/productivity changes and subsequently the farm income structure.

II. Conceptual Framework

The relationship of the project objectives, input, output, effect/impact and the nature of indicators used are given below:

Project Objective	Input	Output	Progress	Effect	Impact
Increase production/productivity levels	Level of funds, manpower, tools and equipment, materials, etc.	Area covered; no. of farmers served; no. of farmers served by participating banks	No. of visits/ technicians/ period; areas covered, planted; no. of farmers visited by technicians, volume of credit available	Changes in production/productivity levels; changes in cropping patterns and intensity	Incremental farm income growth; percent productivity changes

It is hypothesized that with the project output, changes in cropping pattern/intensity will lead to incremental changes in production/productivity levels which in turn brings about farm income growth.

III. Objective of the Impact Assessment Research

Generally, it is to assess the attainment of the project objectives and describe the impact of the project on the respective farmer clientele within identified project influence areas.

IV. Research Design

As far as can be established, two (2) sets of the before-the-project data size can be used; one set covered the crop year 1976 involving about a hundred respondents and the other for 1979 of about the same sample size as the previous. The after-the-project data covered crop year 1980. The pre-test, post-test design with time series will therefore be adopted ($O_1 O_2 \times O_3$).

V. Method of Analysis

Given the time constraint and the content of analysis required for the present impact assessment exercise and considering further that the KABSAKA Project by and large is a well supported/documented project, most data requirements will be coming from secondary sources, i.e., past studies about the project and administrative data available from the implementing agencies.

The unit of observation for farm production and income will be the households spread in five (5) barangays in the municipality.

Secondary data from past studies will be tabulated to determine the changes in production and productivity levels of farm households in the project area. Cross tabulation of farm income variation from different possible sources of income will be undertaken to isolate the definitive contribution of the project thus reducing compounds from other projects of similar nature.

If possible, categorization schemes will be undertaken with regards to how the farmers benefit. This can be done on the basis of size of land cultivated, level of non-farm and off-farm income and tenurial status as controls for productivity/production and income variations.

An example of the type of tables the study will produce is given below in Table 1.

100

Table 1
Off-farm and Income and Productivity
Growth Controlling for Tenure Status

		Off-Farm Income			
		Substantial		Insubstantial	
		Tenure Status			
		Owner	Tenant	Owner	Tenant
Productivity Growth	LOW				
	HIGH				

ASSESSING THE IMPACT OF RURAL ROADS ON
PRODUCTION, EMPLOYMENT AND INCOME

Nicholas B. Rivas, Jr.

I. HYPOTHESIS

A road's impact on the socio-economic well-being of a community or households can be traced back from the direct effect of inputs to its construction and the road itself as output and its effect on the environment.

Its affects the environment directly by being an additional infrastructure and by its ability to generate and divert traffic. The generation and diversion of traffic leads to increase accessibility to many facilities and services. It increases traffic by decreasing travel time and lowering of transport costs; decreases use and reliance on other alternative routes, such as, trails on "short cuts" or ways of travelling such as, walking, horseback riding, etc.; increases the availability of vehicles, decreases transport operating costs and many others. Thus, the impact of a road is generally attributed to its ability to provide for increase accessibility.

A. On Production and Productivity

The impact of a road on production and productivity is felt by its ability to decrease the costs of transporting products to market, by making the trip easier, by decreasing the price of farm inputs and by facilitating extension workers frequent visits to the farm or who would be easier to reach in the Poblacion because of the road. Other production inputs such as credit and use of modern farming technology can be readily availed of.

B. On Employment

Of course, as a result of the presence of a road, there may be displacement of farm laborers but at the same time a fuller utilization of remaining workers, the absorption of others (immigrants) whose entry to the community the road has encouraged. Another impact of the road on employment is increased access to other employment opportunities outside of the community which in time affects income (non-farm income). The presence of the road also attracts the establishment of new enterprises into the community which could provide for places of employment.

C. On Income

It is generally acknowledged that increase in agricultural production and the provision of employment would result to increase in income. The road as catalyst for development will affect income on several ways. The expected increase in farmgate and market prices of agricultural products will be largely due to the decrease in the proportion of goods sold through middlemen since farmers can now bring their own crops directly to the market. The reduced transport costs and a significant increase in producer price level will enable the farmer to compete in the outside markets and an increase in production intended for market not only for subsistence purposes. Hence, farm income will decidedly increase.

112

II. METHODS OF ANALYSIS

In assessing the impact of rural roads on the identified variables, the design that will be used is shown below:

	T i m e	
	1 (pre)	2 (post)
Experimental Group	0	X
Control Group	0	0

The experimental group (E-G) are the communities along or at both ends of the rural road while the control group (C-G) are the communities which have the same characteristics as the E-G, however, it does not have a comparable road. The E-G and C-G will all be located in the same municipality and as much as possible both groups will be predominantly rice producing communities.

The road on study is a minor road and implemented under the Rural Roads Program of the GOP and USAID. The road is 7 kms. long and connects the community directly to the poblacion and to other adjacent municipalities or market centers.

The units of analysis will be done on: the community and household levels. At the community level, the use of C-G should provide clue to changes in the E-G. Since the two communities are matched, the difference changes in the E-G and C-E at the post test would be accounted for by the road. The significance of this difference will be tested by using the T-TEST. Regarding the possibility that the road is not the only developmental project added to the area, the presence of these other projects, however, will be recognized in my study.

In tracing the impact of the rural road at the household level, a sample survey of the households will be made if these information will not be available from the Barrio Socio-Economic Survey (BSES) and Households Economic and Social Survey of the RRP.

12/1

However, since these data are available, based on the RRP household surveys, a sample percentage (10%) will be utilized as baseline information and again a sample (10%) at post construction. The evidence of percentage changes will then be compared.

Other relevant information can also be availed from the RRP surveys, and these are:

1. Information of household access to the road-to be indexed by the location of their residence/farm vis-a-vis the road, and
2. Actual use of the road, indexed by the frequency and number of trips the household make.

The RRP surveys could also provide for such other information like: traffic counts, origin-destination survey; transporters' surveys. Since all RRP roads have feasibility studies projecting internal rate of return and benefit-cost ratios, one aspect, therefore, of my analysis would be to compare actual levels of production and income (based on post construction surveys) with these projections.

III. DATA GENERATION

As mentioned above, the RRP (Provincial Engineers' Office or Manila RRP Office) has a lot of information on hand. In that case, this precludes the necessity of my undertaking an actual field survey. However, for information purposes, the following data, at different levels, will be collected:

- 1) Household: Data on socio-demographic characteristics relevant to production, productivity, employment and income; frequency, nature and purposes of travel, etc.

- 2) Commercial establishments: Data on size, employment, etc.
- 3) Government agencies: Data on activities sponsored in the community, frequency of visits, numbers of technicians assigned in the area, etc.

IV. VARIABLES AND INDICATORS

<u>Variables</u>	<u>Expected Change</u>	<u>Indicators</u>	<u>Sources of Data</u>
1. Agricultural Production & Productivity	Increase	1.1 Production by crop, number of harvest, land area	1.1 HH survey, Baex, Baecon
	Higher prices paid to producers	1.2 Prices at farm-gate & at market	1.2 HH survey
2. Effectiveness of Extension Services	Increase	2.1 No. & frequency visits, No. of farm technicians, type of extension given	2.1 Interview w. extension worker; or Baex reports HH survey
3. Access to and use of credit	Increase	3.1 Repayments of Masagna 99 loans	3.1 Review of AC/ & landbank records HH survey
4. Use of modern farm technology	Increase	4.1 Use of fertilizer, irrigation, etc.	4.1 HH survey, FSDC reports
5. Non-agricultural production/productivity	Increase	5.1 No. of establishments, by type size and No. of workers employed	5.1 Survey of establishments
6. Changes in destination of agricultural products	Distance	6.1 Where products are sold/consumed	6.1 HH survey
7. Income growth	Increase	7.1 Income from all sources of all members of HH by cash & kinds	7.1 HH survey
8. Access to local & outside employment	Increase	8.1 No. of labor force employed locally by type of occupation, regularity of employment, etc.	
		8.2 Location of work of each HH member	
	Distance	8.3 Origin of labor force	

126

Dummy Table

<u>Variable</u>		<u>Rural Road Construction</u>			
		<u>Before construction</u>		<u>After construction</u>	
		<u>Levels of Extension Services</u>			
		<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
Agricultural	LOW				
Production in	HIGH				
Cav./HA					

Analysis: Compare low agricultural production (LAP) with low level of extension services (LLES) before road construction against LAP with LLES after road construction. Do the same with high agricultural production (HAP).

Another analysis compare HAP with high level of extension services (HLES) before road construction against HAP with LLES after construction.