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EVALUATION OF HONDURAS

RURAL ROAD WORK

VOLUME I

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EXECUTIVE SUMMARY

The evaluation encompassed a wide variety of study topics important to assessing the several USAID/Honduras rural roads projects: inspections of the roads themselves, measurement of social and economic impacts as perceived by the beneficiaries, and two special studies, regional impact and that on the growing shrimp cultivation enterprises. Environmental impact was probed.

Summary

The impact of the earliest project roads was nearly impossible to measure because most of these had since been rehabilitated or reconstructed, causing confusion in the minds of the beneficiaries. The principal target of the impact measurement was Rural Trails and Access Roads, new enough to be remembered and completed with sufficient time for impacts to be evident. Inspections of some Rural Roads II and some roads built by other institutions were conducted to furnish basic information on them.

The research found the roads to generally have been properly constructed. Some faults were found with lack of completion of some elements in the Rural Trails and Access Roads project; the supervision was improved for Rural Roads II and the contractors had finished their work. There were some design problems detected, mainly on those roads subject to flooding; the roadbeds were not high enough to overcome the problem. Too, a few created dams which increased the flooded areas. Probably the major weakness in both projects was that on some, insufficient select material had been used on the surface and on others, the surface had not been properly compacted.

The overwhelming problem found was the lack of proper maintenance. The three district maintenance offices have nearly no equipment, small budgets, and insufficient personnel to effect the routine repairs necessary to prolong the life of the roads. The national maintenance office has experienced reduced budgets the last two years while more and more roads were being built. The problem is a serious one that must be faced if AID is to protect its investment.

Economic benefits were studied via two main approaches: from the view of the beneficiaries, and through two special studies of a macro nature. The beneficiaries engaged in agriculture, shrimp, salt, transportation, and commerce had reaped unusually high

benefits from the roads. First, the roads opened areas so that more land is devoted to crops and livestock, and to the shrimp and salt enterprises. Second, the opening of the roads was quickly followed by many technical assistance services and these further spurred the development of the region. That expanded development, more land and higher yields, then stimulated many small businesses. One of the major beneficiaries of the combination of opening the roads and the provision of technical services was transportation. Services grew from horses to modern buses and trucks, all operating profitably in the new areas. That, in turn, brought still another benefit to the communities, the additional opportunities to associate with other people, to bring in their supplies at lower cost, and to haul their produce to better and farther markets.

The study of the Northwest Region showed that the effects of the development after road construction are greater than the sum of the beneficiary effects. Commerce, inter-regional transportation, credit institutions, and many other services are considerably enhanced. That is, there is a benefit beyond the farmers and their families; the impact spreads to a series of businesses that are spawned or operate at a higher level.

The attention to the burgeoning shrimp cultivation enterprises showed impacts on two sectors: the small producers and the larger national and international growers. While the small operations lack technology and credit, they still increased their incomes substantially. The larger growers, with sufficient capital and considerably higher technology, were increasing rapidly in number and moderately high in production. That production was being marketed in the United States, providing valuable hard currency for the nation. The study also detailed the very large potential remaining for the shrimp industry, at least 10,000 hectares that could be put into shrimp farming if the access roads were in place.

The social benefits were mainly measured via the perceptions of the beneficiaries of their situation before and after the roads. They reported more primary schools, more children enrolled in school, more youths traveling to other towns where secondary education was available. Some adult education has now reached the communities and the people are participating in that opportunity.

Health benefits were equally evident. More rural clinics had been built, nutrition was being taught in some communities, travel to hospitals and other health facilities was easier. Some organizations had entered many communities and were helping with the construction of latrines and potable water systems. More needs to be done in health but a substantial beginning has been

made. Family planning information is now available in some areas but there are many others where that is still lacking.

Women tended to benefit somewhat less than men but they, too, had found more employment, some new occupations, and opportunities in commerce. They perceived the increased education and health facilities as particularly benefitting them. The participation of women in local councils, volunteer work, and other community efforts had increased.

A major thrust of the rural roads projects has always been the rural poor. These were the primary beneficiaries of the AID efforts. They made up an overwhelming proportion of the beneficiaries. They gained economically and socially from the opening of the roads. This included some small businesses and processing industries, almost entirely lacking when there was no road.

Few negative environmental effects were found. Loggers had come in when roads opened and despite the rules, had deforested some areas. The access roads they built were cited by the forest service as detrimental for they often violated the construction standards and soil erosion occurred. For some time after the opening of the roads into the areas where shrimps are now grown, the mangroves suffered devastation. Their cutting for firewood to help evaporate the water in the salt extraction process hastened the losses. The forestry service is now controlling these valuable assets much more closely and reported that little damage is now being inflicted.

The evaluation team examined the goals and objectives of the several projects and tentatively assessed their accomplishments. In almost every case, the inputs had been wisely used and they had produced the expected outputs. The general view is one of considerable achievement. The major flaw was that because of the lack of maintenance expected from that directorate in the Secretariat of Communications, Public Works, and Transportation, the anticipated life of the roads had been shortened, causing a great deal of the effort of subsequent projects to go into rehabilitation, and in some cases, reconstruction. The economic and social goals, as summarized previously, more than met the expected outputs from the projects.

Conclusions and Recommendations

Each of the results chapters contains its conclusions and recommendations. Those are summarized here so that they can be reviewed easily. Obviously, some of the conclusions are interrelated and thus so are their recommendations. When they were exact duplications, one was eliminated. If they contained

elements important to their evaluation task, they were retained even though they are partly in restatement.

Inputs and Outputs

There were many variations within the goals and objectives of the six AID projects. The ex-post evaluation could not, of course, quantify these in absolute terms. In relative terms, however, the findings were as follow:

Goal: Increased agricultural production.

There were substantial increases in production.

The increases, of course, are not solely due to the roads; many agricultural and other services contributed. Nevertheless, most of those services had not worked in these areas before the roads were constructed; their arrival, too, is at least in part, an output, which in turn facilitated the expanded and improved production of crops, shrimp, and livestock.

Goal: Greater commerce serving the areas.

Many businesses, although mostly small, were established in the served communities. Small fruit canneries had been installed.

Some larger businesses were also established: the many new shrimp farms, the hundreds of manzanas of new coffee plantings and their processing plants, a sizable cheese and butter plant was in operation, and many others such as factories for tiles, blocks, tools, equipment, grain silos, and a small shoe factory.

The roads were not the only inputs that helped make these possible. Again, however, they were the beginnings - the other institutional (including AID) efforts arrived after the roads and the final results were positive outputs.

Goal: Improved access to education and health.

The access was definitely enhanced:

- . More schools and teachers.
- . More children enrolled in primary school.
- . More youth traveling to secondary schools.
- . More health centers.
- . Easier and faster arrival to these centers and to doctors and hospitals.
- . Many beneficiaries stated that they now had improved housing, potable water, and latrines.

While these are but indicators, they are important in the minds of the people served by the AID roads.

Not all of the projects specifically mentioned the rural poor but this was implied; only the most recent projects stated goals for women and minority groups. Whether or not these were listed in the project papers, there were benefits to these segments of the population. In very general terms, these outputs can be stated:

Rural poor: All of the project roads benefitted the rural poor; as stated in a previous evaluation, the larger farmers and businesses also profited, and often more, but that does not detract from the basic ingredient; the rural poor received many benefits.

Women: This segment benefitted mostly from improved access to education and health, in finding some additional employment, and in several ways enjoying a reduction in their hard work and lives in general. This was not a strong goal achievement of the projects but an output was felt.

Minorities: The greater numbers of these populations are among the rural poor and their economic, educational, and health opportunities were enhanced. The two larger groups, blacks and Indians, directly benefitted from the roads for these were constructed in many areas where they live.

These three specifically mentioned groups perceived that they had benefitted from the road construction projects. They were as appreciative of them as any other portions of the population. Some, in differing degrees of output, were achieved for the rural poor, women, and minorities.

In the most recent roads projects, one other goal has been included: that of increasing the production and marketing of export crops. No quantification was attempted in this brief survey but many examples were found where "without" roads, none was produced and "with" the roads, the crops were being grown, sold, and exported. Chief among these were: cantaloupes, squash, watermelons, shrimp, sesame seed, fruit, onions, green peppers, and cashew nuts. Again, the roads were not the only influence but without them, these products would never have been produced and entered into the export markets.

In a very specific sense, there were accomplishments toward all of the goals stated in the several projects. They varied in the degree of achievement (sometimes due to inclement weather and other uncontrollable variables) but all were directly observed and verified. While it would have been desirable to have done

more quantitative measurements, their lack does not detract from the general conclusion that the goals were achieved.

Roads and Highways

It must be recognized that the team saw the roads under far from ideal conditions: torrential rains further damaging roads that had deteriorated because of lack of maintenance. Nevertheless, some construction problems were also in evidence; they had not been erased. Those problems caused by faulty construction should have been found during supervision and certainly during the final inspection.

The team suggests that the inspection procedures be reviewed. The two review facets are:

- (1) Engineering should review its final inspection procedures to assure that they are totally covering the completed roads.
- (2) Since it is also possible that after making the inspections and recommendations, some corrections are not being carried out, that phase, too, should be reviewed and modified as needed.

The problems of maintenance are so severe that some of the AID investment is lost and thus "rehabilitation," more often "reconstruction," must be done frequently. The problem is complex and no easy solutions will present themselves. The basic elements in any plan should be as follow.

The USAID/Honduras Mission should, through policy dialogue and other means, bring GOH to realize the futility of the present inadequate maintenance and then appropriate sufficient funds for continuance of service on the roads. This is, of course, a long term solution.

A medium term exercise should be that of assuring that any monies provided by AID for maintenance do not supplant the GOH budget. Cooperation with the other international agencies might be an effective means to achieve this.

Counterpart funds are not all being provided as agreed. Measures to remedy this problem would help toward better maintenance.

A short term solution must also be sought to assure that the roads do not continue to deteriorate even as they are being built. Some possibilities suggest themselves:

- (1) Provide funds for maintenance under contracts with trustworthy local companies.

- (2) The minimal labor program should be continued; strengthening through closer supervision will be a positive asset.

Some other alternatives, of medium to long term effort, are suggested:

- (1) Continue to explore the mechanism of providing some maintenance monies under the direction of the municipalities; that will not be easy since those bodies do not now have that power.
- (2) Continue the efforts to strengthen the tax collection abilities of the municipalities so that some local monies can be used for maintenance.
- (3) Further decentralization of the maintenance districts is highly desirable; that must be accompanied, however, with a separate budget for them so they can better manage their own maintenance efforts.

These recommendations should not be taken as a condemnation of the AID rural road construction projects. Quite the opposite, the team found that a great deal of good construction had been done and that many of these roads were surviving despite the maintenance and traffic problems. Further, it found that the social and economic benefits accruing from the roads was very high. The roads are sincerely appreciated by the beneficiaries, by commercial entities that use them, and by the agricultural, health, and educational services that travel them in order to make their contributions to the development of the rural areas. This leads to a final, overall, recommendation:

USAID/Honduras should prepare and execute a new rural roads project and it should encompass as much of the not now served rural population as can be financed.

The efforts of agricultural and other rural development, the provision of health and educational services, and the long term economic stabilization of the Honduran economy will be well served by such a project.

Economic Considerations

The study of these sample roads and some of the villages they serve showed that the network was indeed constructed where there was a potential for economic benefits and that those benefits are already in evidence. The AID-SECOPT and the small sample of IHCAFE roads are serving their intended goals and purposes.

Every community within the study had progressed economically, thus not only the network but also the access to these communities had equalled or surpassed the anticipated benefits.

The socioeconomic studies on file in the Mission and AID-SECOPT offices in the field were in the files. Those in the AID-SECOPT field offices were complete and well done. The better organized files in the Mission were summaries of the field reports, and while somewhat brief, correlated with those in the field.

Only one recommendation needs be made concerning the economic studies and the road projects:

The Mission and AID-SECOPT should continue their efforts to conduct socioeconomic studies for new construction and for rehabilitation projects. They have served well in the selection process.

The excellent IDB-RRNN project in the Western Region should be incorporated into the AID LUPE project if the present negotiations with IDB fail.

The economic benefits of the roads projects are far in excess of the costs of the projects. USAID/Honduras can be assured of the impact these projects have on the beneficiaries. It can strengthen the documentation by combining the summary and detail study files.

Regional Impact

Most of the conclusions and the recommendations drawn from them are obvious and were briefed under Inputs and Outputs. They merit reiteration for emphasis.

The building of new roads and the rehabilitation of others have brought enormous changes in the agriculture of the Northwest Region. Manzanas in crops has greatly increased. The traditional crops, corn and beans, have increased in yields but they are still primarily for home or local consumption. Potatoes, coffee, and vegetables, on the other hand, have not only improved in both amount grown and yields, but have also entered the national and international markets because of greatly facilitated transportation.

There are still some productive areas without roads; the entire municipality of Dolores is unserved and a road should be built to it from San Miguelito. Some of the roads that were built have not been properly maintained and severely limit or slow traffic; these should be repaired and then kept up.

The road between San Juan de Intibuca and Gracias, Lempira, is nearly useless for the transportation of farm produce. The trip from San Juan to San Pedro Sula, the principal coffee and cattle market, would be cut in half if this road were reconstructed.

IHCAFE has built many penetration roads into the new coffee areas around San Juan and these have had almost explosive effects on the amount of coffee planted there.

These roads serve well at the beginning but the traffic soon outstrips their capacity; many of these should be widened and improved.

There are severe limitations on how many and of what type roads IHCAFE can build; consideration should be given to passing this function to the AID-SECOPT project so that the roads would serve better and for a longer time.

Potato production in the western part of the region is a highly successful cash crop that serves much of the nation. Its transportation needs are heavy at harvest season. The needs for technical assistance, too, increase yearly and the present services have been unable to keep up with the work load.

AID's Private Sector office should look into the possibility of making loans to private transportation companies to help them upgrade and increase their vehicles to meet this need.

The AID LUPE project, now in the planning stage, should include additional technical assistance to the potato farmers, such as that now furnished by the Japanese Technical Mission to fruit and vegetables growers.

The Swiss project in La Paz, MARGOAS, has had an admirable program of technical assistance to agriculture and the maintenance of the roads that serve those areas. The combination has fostered more plantings and higher yields, while cutting the cost of transporting the produce.

The new projects of AID-SECOPT and LUPE should use this same combination: technical assistance and road maintenance.

The LUPE project should incorporate the La Paz area when the MARGOAS project ends; a great deal more improvement can be engendered with more time and resources.

In addition, the LUPE project should conduct a marketing and transportation study to determine how the two can be better facilitated; there are currently problems that can be resolved.

Rural Roads I and II projects, and to a lesser degree the roads of IHCAFE, have had a stimulus effect on the agriculture of the Northwestern Region. This effect is not only visible at the micro economic level but also regional; commerce, transportation, and general services have increased notably. The work should be continued and, if possible, in close cooperation with the efforts of the divisions of Rural Development and Private Sect

Shrimp, Salt, and Transportation

The southern coastal zone shows great contrasts. These include the huge investments of the larger companies growing shrimp and the small amounts put in by the small growers. Without the shrimp, the small growers would be trying to exist by extracting salt. There is little land available for additional agriculture.

It is obvious from the figures presented in this study that the small, as well as the large, growers can benefit substantially from the investment in roads. The cost-benefit ratios are positive.

The Mission should invest in access roads in the studied areas.

AID-SECOPT should undertake a design study for the roads into the lying areas; the present design is inadequate in view of the heavy container truck traffic and the frequent flooding.

These roads should favor the shrimp growing areas but those for agriculture should not be neglected as they, too, offer sufficient economic impact to justify the roads.

Rural Development should collaborate with RENARE and the Taiwan Technical Mission to assure appropriate development of the shrimp industry within LUPE.

At the same time, the agriculture and private sector divisions should design and execute complementary projects that will help the area reach its potential. Similarly, USAID/Honduras should do all it can to strengthen the participation of Natural Resources, Renewable Natural Resources, COHDEFOR, and the foreign assistance organizations to intensify the transfer of technology and obtain supervised credit for the beneficiaries.

Social Impacts

It is abundantly clear that the rural road projects have generated a great deal of favorable social and other changes in the communities along the roads built and within the area of influence. Specifically, the roads have enhanced the opportunities for education and have contributed to the

improvement of health conditions at both the family and community levels. They have also helped to increase mobility and instill a sense of community, generating in the process village organizations and leadership. In all other categories of social impact such as population changes and impact on the rural poor, women and development, environment and government policies, the road projects have had positive impacts. The near unanimity of favorable replies and observations and the high congruence of views between the beneficiaries and the community leaders on most of the discrete items of inquiry in the survey reflect the spread of changes occurring in the communities served by the roads. Some changes are not yet perceptible or in extreme cases, have not yet come about. These differences in degree can be generally expected in the context of social development. The results suggest the following recommendations:

It would greatly facilitate future evaluations of the social and other impacts of the road projects if, at the time of selecting the roads to be built and the communities to be served, a community profile that would provide the baseline data were prepared.

It would also be useful if future project design formats included more elements of the logical framework so that specific rather than general social goals are listed.

Social benefits would be maximized if there were more coordination and/or integration of road building with other AID projects and those of the government services so that all the efforts could bring maximum benefits.

Finally, the near unanimous social lament on the conditions of the roads and the urgent need for their repair and maintenance should be attended to without unnecessary delay in order to ease increasing social frustration. This would suggest that government policy should concentrate on rehabilitation and maintenance rather than on construction of new roads. The social study also suggests that we could be helpful to maintenance if some mechanism could be found to incorporate the municipalities and the communities into that effort.

The overall conclusion is that the USAID/Honduras rural roads projects have performed well in their construction programs and in engendering a greater degree of economic and social impacts than might have been envisioned. In reiteration of an earlier recommendation:

It is urged that the Mission develop and execute a new rural roads project; the rural people and the nation need the roads.

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EVALUATION OF HONDURAS RURAL ROAD WORK

TABLE OF CONTENTS

	<u>Page</u>
VOLUME I	
EXECUTIVE SUMMARY	i
Summary	i
Conslusions and Recommendations	iii
ACKNOWLEDGMENTS	xiii
LIST OF TABLES	xx
CHAPTER I: INTRODUCTION	1
A. Evaluation Setting	1
1. Objectives of the Evaluation.	2
2. Methodology	2
a. Conceptual Framework	2
b. Overall Methodology.	3
c. Site Selection	3
d. Measurement Instruments.	5
e. Interviews and the Samples	7
f. Review of Documents.	10
3. Limitations to the Evaluation	12
B. Project Setting.	13
1. Geographic Setting.	13
2. Socio-Cultural Aspects.	14
a. Population	14
b. Health	15
c. Education.	15
d. Communications	16
e. Political Participation.	16
3. Economic Perspectives	17
a. Economic Indicators.	17
b. Agriculture and Agribusiness	18
c. Industry	20
d. Commerce	21
CHAPTER II: THE ROAD PROJECTS	23
A. Road Projects in Honduras.	23
B. Honduran Transportation: 1960-1987	25
1. Roads and Highways.	25
2. The Railroads	26
3. Water Transport	26
4. Air Traffic	26
5. Mule and Horse Transportation	27

C.	Roads and Highways Projects	27
1.	Government Projects	27
2.	International Assistance	28
3.	The USAID/Honduras Rural Roads Projects	29
D.	Agricultural Development Programs	31
1.	AID Economic and Road Development	31
a.	Past Projects	31
b.	Future Agricultural Thrusts	32
2.	Related AID Assisted Projects	33
E.	The SECOPT Organization	34
1.	General Directorate for Roads and Highways	35
2.	General Directorate for Maintenance	35
F.	AID Road Evaluation Process	36
G.	Evaluation of the Sample Roads	38
H.	Conclusions and Recommendations	40
	CHAPTER III: INPUTS AND OUTPUTS OF THE PROJECTS	43
A.	Inputs	43
B.	Direct Outputs	44
1.	The Roads and Trails	44
2.	Rehabilitation	46
3.	Maintenance	47
4.	Institutional Strengthening	48
C.	Goals of the Projects	50
D.	Sustainability of the Efforts	52
1.	Construction	52
2.	Maintenance	53
	CHAPTER IV: ECONOMIC IMPACTS OF THE SAMPLE PROJECTS	54
A.	Agriculture, Roads, and Economic Indicators	54
E.	Agricultural Enterprises	55
1.	Land Tenure	55
2.	Agricultural Production	57
a.	Coffee	58
b.	Basic Grains	59
c.	Other Crops	60
d.	New Crops	60
e.	Livestock	61
f.	Ascribed Reasons for Agricultural Improvement	65
g.	Technical and Credit Services to Agriculture	66

C.	Other Economic Activities	68
D.	Employment	69
E.	Transportation Enterprises	70
	1. Passenger Transportation	71
	2. Freight Transport	72
F.	Ascription of Cost-Benefit	73
G.	Conclusions and Recommendations	74
CHAPTER V: NORTHWESTERN REGIONAL STUDY		76
A.	Agricultural Production in the Region	76
B.	The Study Procedures	78
C.	Agriculture	79
D.	Indications of Regional Cost Benefits	81
E.	Technical Assistance for Agriculture	82
F.	Transportation	83
G.	Conclusion and Recommendations	84
CHAPTER VI: SHRIMP, SALT, AND TRANSPORTATION		87
A.	The Study Zone	87
B.	Shrimp and Salt Production	88
C.	Commercialization	90
	1. Shrimp: Small Producers	90
	2. Shrimp: Large Producers	90
D.	Estimated Medium and Long Term Potential	91
	1. Potential	91
	2. Medium and Long Term Expectations	91
	3. Technical and Credit Assistance	93
	4. Problems in Shrimp Production	93
E.	Transportation Services	94
	1. Infrastructure	94
	2. Passengers	94
	3. Freight	96
	4. Financial Returns from the Roads	97

F.	The Shrimp Potential and the Needed Roads	98
1.	The Potential	98
2.	Investments Required	99
3.	Expected Benefits	100
4.	Cost-Benefits	100
5.	Indices of Benefits Over Costs	100
G.	Concxlusions and Recommendations	101
CHAPTER VII: SOCIAL AND OTHER IMPACTS		102
A.	The Socio-Cultural Study Approach	102
B.	The Socio-Cultural Context	104
1.	Western and Northwest Regions	104
2.	The Southern Region	106
C.	Survey Samples	106
D.	The Socio-Cultural Impacts	108
1.	Education	108
2.	Health	112
3.	Mobility	113
4.	Population Changes and Family Planning	117
5.	Rural Poor	119
6.	Women and Development	121
G.	Environment	123
H.	Impact on Government Policies and Services	126
I.	Conclusions and Recommendations	126
CHAPTER VIII: POTENTIAL FOR NEW PROJECTS		128
A.	General Observations	128
B.	Sample Projects for Consideration	128
1.	San Juan, Intibaca to Gracias, Lempira	130
2.	San Antonio to San Joaquin to Peña Blanca, in Copan	131
3.	San Miguelito to Dolores, Intibuca	132
4.	Guapinol across Causeway to Potential Shrimp Farm, in Choluteca	133
5.	San Lorenzo to Aure Abajo to Chinga in Valle	134
C.	Information on Potential Areas from Other Studies	135
1.	The Belen-Gualcho Development Project	136
2.	IHCAFE Road Program, 1988	136
3.	COHDEFOR List	137

D.	A Special SECOPT - AID List	137
E.	Other Potentials	137
F.	Shrimp and Salt	138
G.	Completion of Rural Trails and Access Roads Project	139
ANNEX A: Acronyms and Abbreviations.		141

VOLUME II

ANNEX B: Reference Documents
ANNEX C: Study Instruments
ANNEX D: Contracts
ANNEX E: Summary of Road Information Data
ANNEX F: Gross Domestic Product, 1960-1987
ANNEX G: Project Evaluation Matrices
ANNEX H: Supplementary Information: Shrimp and Salt

LIST OF TABLES

		<u>Page</u>
Table	I.1: Number of Interviews Completed by Instrument, Region, Department, and Community	8
Table	II.1: Roads and Highways Projects by Year Funded, Institution, Project Number, and Funding	24
Table	II.2: Sample Roads Inspected by Department, Project, and Length in Kilometers	37
Table	II.3: Conditions of the Major Components of the Sample Rural Trails and Access Roads	38
Table	III.1: Identification of AID Rural Roads Projects by Year, Agencies, Project Designation, and Funding Level.	44
Table	III.2: AID Rural Roads Projects by Beginning Year, Location, Number of Roads, and Extension in Kilometers	45
Table	IV.1: Mean Manzanas Farmed by the Respondents Before and After the Road Construction, by Region	56
Table	IV.2: Mean Manzanas with Title among the Farmers Before and After the Roads Were Constructed, by Region.	57
Table	IV.3: Mean Amount of Land in Cultivation on the Sample Farms Before the Road and Now, by Region.	58
Table	IV.4: Number of Net Beneficiaries, Manzanas Renovated, and Net Annual Benefits from IHCAFE Road Construction, by Year	59
Table	IV.5: Number of Farms with Dairy and Beef in the Sample, by Number of Animals, Before and After the Roads	62
Table	IV.6: Technical Assistance Institutions Serving the Farmers by Percent of Mentions.	66

Table	IV.7:	Percent of Farmers with Credit by Mentioned Financial Institution, Before and After the Roads.	67
Table	IV.8:	Percentage of Processing of the Agricultural Products among the Sample Farmers	68
Table	IV.9:	Incidence of Employment by Type and Percentage of Interviewees Citing Source Before, and After Road Construction. . .	70
Table	V.1:	Changes in Production of the Principal Crops between the Before and After Periods of the Road Projects: Intibuca	80
Table	V.2:	Coffee Production in the San Juan de Intibuca Zone, Before and After the Road Construction	81
Table	V.3:	Manzanas, Yields, and Production Before and After the Road, Marala of La Paz Department	81
Table	VII.1:	Identification Data on Beneficiaries Interviewed	107
Table	VII.2:	Identification Data on Interviewees at the Community Level	109
Table	VII.3:	Educational Impact Indicators	111
Table	VII.4:	Health Impact Indicators.	114
Table	VII.5:	Mobility Impact Indicators.	116
Table	VII.6:	Population Changes and Family Planning Indicators.	118
Table	VII.7:	Impact Indicators on Rural Poor	120
Table	VII.8:	Women and Development Impact Indicators . . .	122
Table	VII.9:	Environmental Impact Indicators	125
Figure	I.A:	Gross Domestic Product	19

CHAPTER I: INTRODUCTION

USAID/Honduras has been very active in the financing of rural roads in Honduras, beginning in 1946, but with renewed impulse in 1964. These efforts have involved three major types of assistance:

- (1) Direct finance of five projects with the Secretariat of Communications, Public Works, and Transportation (SECOPT), one with the Secretariat of Natural Resources (RRNN), and one with the National Agrarian Institute (INA).
- (2) Finance (through local currency) for general operations or specific subprojects for government agencies or privat. voluntary agencies (PVOs).
- (3) Provision of the Government of Honduras (GOH) counter-part funds for projects financed by other bilateral and international agencies.

In 1981, an external evaluation was conducted by AID of its rural roads projects and in 1982, AID/Washington performed a project audit (described in a later section). The Mission has also produced many internal reports and studies in the preparation of projects and for the designation of specific roads to be built.

In 1988, the Mission decided to conduct a general review of all of its previous projects plus an indepth study of the infrastructure and the socio-cultural and economic effects of these rural roads and trails projects. This report is the result of that effort.

A. Evaluation Setting

The projects have been implemented in all of the departments (departments in Honduras are similar to states in the US) although only one small subproject was carried out in the Department of Gracias a Dios. As a generality, the work has concentrated on the provision of farm to market, access, and penetration roads and trails that would increase the economic activity of the areas. AID has also sought to enhance the social, health, and educational services to the residents at the same time. The projects were also designed so that benefits accrued to women and to the rural poor, thus spreading the effects to the most needy segments of the population. It is within this context that the evaluation design and methodology were developed.

1. Objectives of the Evaluation

USAID/Honduras stated the objectives for this study as "to ascertain the effectiveness and impact of AID rural road activities in Honduras and to improve the implementation of rural roads projects in the future." It elaborated these two general objectives by stating that the evaluation would determine the extent that agricultural, social, and economic development has been accelerated in the areas served by these roads.

These directions were articulated into separate facets of the study, each of which was investigated to the extent possible. The separate components included:

- (1) Economics (agricultural, transportation, forestry, commerce)
- (2) Socio-cultural (health, education, community participation, organizational participation)
- (3) Services (of all types operating in the area)
- (4) Environment (forests, parks, wildlife, soil erosion)

Within these, the research specified those effects accruing to women, youth, the rural poor, and other segments of the population.

2. Methodology

The plan for the evaluation included a broad scope of work designed to furnish the required information via the most important sources: the documents of the projects, previous evaluations, interviews with the technical staffs involved, on site inspections, and questionnaires for the personnel of the services given to the area, for the leaders in the communities, and for the beneficiaries themselves. That is, it sought both professional and local resident information and opinions. This combination was expected to yield the most important data on both the roads and their effects.

a. Conceptual Framework

The long history of AID road building in Honduras had resulted in some construction much earlier than most residents could recall. Too, those currently under construction or just completed would have had insufficient time for major impacts to have occurred. It was therefore determined that the primary target of this evaluation would be what is commonly called "Rural Roads I" with its roads built from two to five years ago. At the same time and

within the sampling strategy, combinations of road projects in an area made it possible to see what happened, for example, as a result of a 1974 project and later ones that added to the network and/or widened or otherwise improved some of those built earlier. This part of the framework could not be addressed completely (specific road information was not available on some projects) but as a generality, it worked well, giving as broad a view as possible of the AID rural roads activities.

As noted in an earlier setting, the contextual framework also sought a combination and opinions: professionals in roads, services, and environment; and the direct data on opinions of the beneficiaries. This two pronged approach was geared to obtain the technical information as well as the appreciation, or lack of it, of the people the roads purported to serve.

b. Overall Methodology

While the many documents contained highly useful information, the primary sources of valuative data were judged to be those emanating from the direct field approach: inspections and the administration of questionnaires in face to face interviews. This direct field approach was found to have been wisely chosen since in certain aspects of the roads, the effects varied significantly. Generalizations would have served poorly the objectives of the evaluation.

The second general methodological approach was that of contrasting the "before the road was constructed/rehabilitated" with the "present situation." In other words, a "with" and "without" comparative focus. Much of the humanitarian effects of the road construction came from this contrast of times and conditions. It aided greatly, too, in the determination of some economic benefits of the projects.

The final general approach was to utilize to the fullest the expertise of the evaluation team and to do so in conjunction with the AID engineering and agriculture personnel, and with the field staffs of the collaborating institutions, principally SECOPT. This application of the talents of the major actors assisted greatly in producing a broader picture of the program across the years.

c. Site Selection

Three sets of sample sites were chosen for the evaluation: the roads constructed, communities that were served by them, and some communities where potential roads could benefit a productive area. Each of these sets of sites were considered together while

assuring that the needs of each were met. (See Annex C for the list of selection criteria utilized in the process.)

The roads themselves were the primary objective of the site selection since it was desirable to study as many as possible within the AID projects. Each was to be inspected by the team engineer; these, then, included those from earlier activities and from the present project. These roads also were considerably greater in length than those just between the communities selected for the indepth socioeconomic study. When it was possible to arrive by vehicle, the entire length of the constructed road was surveyed, as well as some auxiliary access roads from these. When new roads, and those built by some other organizations of interest could be reached within the allotted time, these, too, were inspected. The team engineer also visited as many of the sites where road communication had been interrupted in order to ascertain the exact condition and cause of the problem. (See Chapter III for the total list of those inspected.)

The several road projects with the lists of specific roads constructed were studied in detail. From them, those that offered opportunities for measuring impacts were selected. These primarily came from the Rural Trails and Access Roads Project but information on others as added. To this new listing was added the information on the Rural Roads II Project, those constructed by IHCAFE and other AID related projects. In conference with the advisers to the evaluation, the final selection of areas to be included was made: Western Region, Northwestern Region, and Southern Region.

Upon arrival in the regions, the lists and maps were discussed first with the AID-SECOPT and/or the SECOPT Maintenance personnel to obtain information on the relative conditions of the roads and the populations served. The communities were listed in a tentative target group that would allow reasonable travel and those with problems. The names of the communities served by these roads were then discussed with the personnel of the Secretariat for Natural Resources (RRNN), the Agrarian Reform Institute (INA), the Honduran Corporation for Forestry Development (COHDEFOR), the Honduran Coffee Institute (IHCAFE) to obtain information on the relative development of the areas. Where important activities were being conducted, many other organizations were consulted: Rural Technologies Program (CDI-PTR), Vision Mundial and CEDEN (Evangelical church organizations), Pueblo Global (Mercy Corps), Caritas (Catholic Relief Services), Plan en Honduras (Foster Parents), and Save the Children. Several international and bilateral project offices were consulted in the areas in which they work.

The suggested areas were stratified by department to assure that some samples fell within each of them. Variations in the production of crops, livestock, and shrimp were taken into account. With these officials and those from SECOPT, a final list was drawn up as the sample communities for the field studies.

Necessarily, because of travel and interview time required, the sample communities were chosen so that two could be completely canvassed each day. While this sometimes demanded 12 hour days, it was achieved. Table I.1 contains the list of regions, departments, municipalities (a literal translation of municipio, which contains one or more towns, villages, and rural areas, and is thus similar to counties in the US), and the communities.

While in conference with the collaborating institutions, the team also probed for productive areas near or in route to the selected communities that should be considered for future projects. Many were mentioned and are included in Chapter VIII. Because of the time limitations, only those that could be reached relatively quickly were selected. The studies on these were completed, in three cases, by the local extension agent.

All of the selected sites were studied by the team; none had to be excluded. In addition, Table I.1 includes locations other than those selected for the indepth study. These were necessary in order to obtain information from government and private officials with knowledge important to the evaluation. These primarily include department capitals and municipal centers but, too, when research or production installations were of utility, they were visited and interviews conducted. (The list of contacts, Annex D, shows these institutions and businesses; it is organized by region.)

d. Measurement Instruments

From the list of objectives and further articulation of them, the team prepared questionnaires, observation instruments, and summary sheets, as appropriate, to address each of the topics. These included:

- . Socio-Cultural Questionnaire: Leaders
- . Socio-Cultural Questionnaire: Beneficiaries
- . Economic Survey: Beneficiaries
- . General Review Instrument: Agriculture Services
- . General Review Instrument: Municipal Authorities
- . Potential Road Survey: Authorities
- . Potential Road Survey: Beneficiaries
- . Freight Transport Instrument: Trucking Companies
- . Passenger Transportation Instrument: Bus Companies

- . Technical Road Information Guide: SECOPT Officials
- . Road Inspection Form: Team Engineer
- . Summary Inspection Form: Team Engineer
- . Project Analysis Matrix

All of these instruments were prepared in Spanish, reviewed by the other team members and the evaluation advisers, given a trial administration with local people, and then revised as needed. The final versions are located in Annex C.

The questions and the instruments served appropriately to their purposes. No major difficulties were found with the wording of the questions although with some farmers, the interviewers had to rephrase some to make themselves fully understood. One question in the potential area form was not analyzed because too few interviewees knew the answers.

When at all possible, the questions were stated so that they could be answered simply through choices. In other cases, of course, it was necessary to include open ended questions so that the respondents would have full opportunity to state their opinions or give additional information.

The questionnaires were precoded, in so far as possible, and the instruments included the coding formats. The interviewers marked the appropriate response blanks. Each night, these were reviewed, revised as required, and the appropriate precoded numbers were inserted. The open ended replies were not precoded since there were too many possible options for them. Their codes were determined in the offices of the International Executive Secretarial Service, the codes added, and the results entered into the computers utilizing the Statistical Package for the Social Sciences. The primary analyses were then performed by this program, which also prepared the tables per the evaluators' instructions. The team member in charge of each evaluation phase also reviewed these replies for further information and for examples to be cited in the narrative.

In the two special studies, regional impact of the roads and that on the shrimp industry, no formal questionnaires were developed. Each of the two specialists designed his own open interviews and observation guides, and conducted the study as necessitated by the requirements of that research.

Except for the technical questions posed by the team engineer with the SECOPT officials, most of the engineering study was also conducted through direct observation and measurement. While he

prepared a guide for his work, he also employed careful notes and other explanatory materials to complete his research.

e. Interviews and the Samples

Since each of the instruments involved differing audiences, the interview samples varied according to their requirements and to the availability of the audiences. The final totals for each instrument, by region, department, and community, are shown in Table I.1. The variation, other than availability of services, is due to the following factors.

The beneficiary forms for the socio-cultural and economic interviews were designed to be administered on a geographic sampling, every second house in the town, village, or rural area. A minimum of 20 beneficiary forms was sought in each community. Two reasons accounted for the cases with fewer than that number. (1) The village did not contain enough houses. (2) Since the primary focus of the economic benefit form was to elicit information on agriculture, livestock, and shrimp, there were some residents that were not involved in any of these and they were excluded. The samples, when taking these factors into account, were accurate and representative of the intended audiences.

The numbers of interviews with municipal officers, agricultural and other related services, freight company owners, bus company owners, and community leaders varied from none to many in some communities. In some communities, there simply were fewer leaders than in others. Absence from the community during the interview period accounted for some losses since the team could not return because of the pressure of time. Despite the small numbers in some cases, the interview information is valid since it sought specific data available only from these audiences, and their information was useful in quality rather than quantity.

The communities and their production areas that do not now have access roads were, of course, difficult to enter, occupying a great deal of time. Since this was a secondary emphasis in the evaluation, the interviews were administered to those people who could be reached within the time limits. Therefore, these are fewer than is the case with the regular sample communities. The information received, however, was so similar among the respondents that the lower numbers are not expected to in any way reduce the validity of the replies.

Table I.1: Number of Interviews Completed by Instrument, Region, Department, and Community (abbreviations at table end)

Location	Econ Bene	Soc Bene	Soc Lead	Agri Serv	Muni	New Auth	New Bene	Tran Psgr	Tran Carg	TOT.
WESTERN										
<u>Copan</u>										
Nueva Armenia	20	20	9	1	1	0	0	0	1	52
Las Flores	19	20	6	1	1	0	0	1	0	38
SJoaquin/PBlanca	0	0	0	0	0	1	12	0	0	13
<u>Ocotepeque</u>										
Gualtaya	20	20	4	1	0	0	0	0	0	45
Azacualpa	21	19	11	0	1	0	0	0	0	52
San Felipe	0	0	0	0	0	0	0	1	1	2
<u>Lempira</u>										
Cayquin	17	21	4	0	1	0	0	0	0	43
La Campa	21	19	9	1	0	0	0	0	0	49
Las Flores	0	0	0	0	0	0	0	1	0	1
NORTHWESTERN										
<u>Intibuca</u>										
Azacualpa	24	30	11	2	0	0	0	2	0	69
Chiligatoro	24	30	11	1	1	0	0	0	0	67
San Miguilito	26	31	13	1	1	0	0	0	0	72
San Juan	24	31	15	2	1	1	11	1	1	87
Dolores	0	0	0	0	0	1	7	0	0	8
Rio Grande	0	0	0	0	0	0	0	0	1	1
Cataulaca	0	0	0	0	0	0	0	0	1	1
<u>La Paz</u>										
El Cerron	22	25	4	0	0	0	0	0	0	51
La Florida	25	27	8	1	0	0	0	0	0	61
Florida	0	0	0	0	0	0	0	0	1	1
SOUTHERN										
<u>Choluteca</u>										
Monjaras	29	31	13	1	1	0	0	0	1	56
Guapinol	31	30	2	0	2	0	4	1	1	71
Tierra Blanca	30	30	22	1	1	0	0	0	0	84
Namasigue	31	36	17	2	1	0	0	0	0	87
Brisas del Mar	10	10	4	0	0	0	0	0	0	24
Tulito	0	0	0	0	0	0	0	1	1	2
La Tajeada	0	0	0	0	0	0	0	1	1	2

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Location	Econ Bene	Soc Bene	Soc Lead	Agri Serv	Muni	New Auth	New Bene	Tran Psgr	Tran Carg	TOT.
<u>Valle</u>										
El Conchal	32	30	13	0	1	0	0	1	0	77
Cubulero	31	31	7	0	0	0	0	1	1	71
Aure Abajo/Chinga	0	0	0	0	0	1	7	0	0	8
Nacaome	0	0	6	2	0	0	0	0	0	8
San Lorenzo	0	0	0	1	0	0	0	0	0	1
TOTAL	447	489	192	18	13	5	43	11	16	1234

Column Abbreviations: Econ Bene=Economic study: beneficiaries; Soc Bene=Socio-Cultural: Beneficiaries; Soc Lead=Socio-Cultural: Leaders; Agri Serv=Agricultural Services; Muni=Municipal Authorities; New Auth=Potential New Roads: Authorities; New Bene=Potential New Roads: Beneficiaries; Tran Psgr=Transport of Passengers; Tran Carg=Transportation of Cargo (freight). SJoaquin=San Joaquin; PBlanca=Pena Blanca.

In addition to the team members, the interviewers included field staff experienced in census, social, and economic surveys that had been trained for and had worked in the interview field. In the first region, Western, six interviewers were chosen, trained in the specifics of the questions and the form of applying them. To reduce recruitment and training time in the other two regions, five of these were retained. Then, to assure appropriate local knowledge, three others were recruited and trained in each of the other regions, Northwestern and Southern. (See the list of field staff at the beginning of this report.) Team supervisors were present or nearby, available for consultation should any problem arise. Only occasionally did this occur. The further scrutiny of the instruments each evening increased completion and accuracy. Very few questions remained unanswered, due almost entirely to the inability of the interviewee to respond. One question in the instrument for authorities in the areas where there was no road but was thought to have potential (New Auth) in Table I.1) was abandoned because of a wide variation in price quotations; it was decided to use those given by the agricultural services interviewees, since these people dealt with produce prices regularly.

It is important to emphasize that no interview was refused. Every intended respondent answered to the best of his or her ability in every community in the sample. The community members

and officials were eager to talk about the roads and about any benefits or problems they had occasioned.

The 1,234 interviews, accomplished in a three week period under difficult conditions of weather and travel, represent an unusually strong sample. Similarly, the 447 economic and the 489 socio-cultural completions with beneficiaries are very high proportions of the residents available in their villages and towns. Representativeness cannot be questioned. Similarly, the number of leaders in the communities literally represents the totality of those available. Finally, the method of interviewee selection, invariable across the communities, plus the completion of nearly all the questions, suggest high validity.

f. Review of Documents

USAID/Honduras provided a preliminary list of required documents to be reviewed. In addition, during the preparatory stages, others were found and made available to the team. The Central American Integrated Development Bank and the Inter-American Development Bank provided others. Other divisions of AID, AID-SECOPT, SECOPT Maintenance, Natural Resources, Renewable Natural Resources, COHDEFOR, INA, and several private voluntary and bilateral agencies also gave the team useful documents. All of the references are listed in Annex B, Reference Documents.

The primary documents of interest to the evaluation were those dealing directly with the projects: project papers, progress reports, inspection reports, socio-economic studies, an evaluations, and an audit. One additional form was developed to summarize the information from the projects: Project Analysis Matrix (included in Annex C and with the completed matrices in Annex J). Each of the major project documents was reviewed and the appropriate information inserted in its matrix. Summary data from the field studies were added later.

When the reviewed materials were utilized in the narrative report and when data from them were extracted for the tables, the sources are listed. They contributed heavily to the background information for the report. They are not reviewed further in this section.

The external evaluation, even though it is also cited in the text, merits a brief review herein. In 1981, AID/Washington conducted an evaluation of the roads done under two projects, those begun in 1965 and 1974. Although that team found that maintenance had been neglected, they generally judged the construction to have been satisfactory. They also found that a considerable social and economic impact had been engendered by

the presence of the roads but they pointed out that the addition of agricultural development services to the areas during and after the road construction had further spurred the impacts. It was their opinion that large land holders and commercial people had benefitted more than the small farmers but felt that this did not detract from the stated objective of aiding the rural poor. A major section in that evaluation showed that transportation costs had been greatly reduced for the farmers. That is, the costs of freight by vehicle was much cheaper than when carried by horses and mules.

In 1984, an audit team from AID/Washington conducted an interim study of the Rural Trails and Access Roads project. The field inspections found generally good construction but with some deficiencies in drainage ways and soluble soils used in some surface foundations. They noted that both had caused excessive erosion. They also reported that in a few cases, the right of way had been too narrow and that the surrounding vegetation was causing some damage to the road surface.

The audit team also interviewed 117 farmers, teachers, officials, and businessmen. These expressed considerable satisfaction with the construction of the roads. At the same time, the respondents voiced nearly unanimous complaint about the inadequate maintenance, noting that the deterioration over the years was a serious threat to transportation in the future.

Global Village (Mercy Corps) conducted a brief review of two of its project areas, Belen-Gualcho in Lempira and the Yure River area in Yoro. Although the project's roads had only recently been completed, or were still under construction, the PVO found many early impacts. Agricultural services were entering the areas and both new and expanded crops were having beneficial effects. Health and education, they stated, were being affected positively. Some small businesses had begun and these were anticipated to aid the residents with reduced transportation costs.

Although still in construction, the emergency relief program within PLANDERO, in the Western Region, was also cited as producing almost immediate results. Chief among these was the utilization of the many unemployed in useful tasks, including road building by hand, but the Natural Resources team also found that additional crops were being planted, fertilizers were being brought in at lower transportation cost, and that the general perspective for this formerly drought stricken area was positive, even considering the small amount of work that had gone into the construction of these access roads.

Preliminary studies by the Honduran-West German project (COHAAT) demonstrated many salutary effects of their roads (manual labor) in the Southern Region. Again, these were early results but they found similar improvements to those in the other studies. The Belgian sponsored project, CORASUR, is also noting almost immediate results: more crops being planted and more technical assistance to the farmers in the Choluteca area. The long term MARGOAS project in the Department of La Paz has both completed many roads and has maintained others. It, too, cites increased production, more health centers, and more teachers in the schools. The AID-IHCAFE project has constructed many penetration roads into the new and renovated coffee areas, especially in Copan, Santa Barbara, and Intibuca. An earlier study by Morris of Development Associates found that in five to seven years, the increased production would pay for the roads. Jones, Mejia & Osorio, in a 1988 survey of transfer of technology, cited the opening of several new Natural Resources extension offices once roads had been built into the areas.

Finally, the Inter-American Development Bank, in its proposal for a rural access roads project, cited a number of findings from its own studies in Honduras and elsewhere in the Americas. These, the report stated, were universally positive but not always equally distributed among differing segments of the population. It noted, particularly, that small farmers always benefitted but that these impacts were not necessarily sufficient to cause a major change in the living standards of the people.

3. Limitations to the Evaluation

Obviously, had more time been available, greater breadth and scope of this evaluation could have been achieved. The confinement of the study to three regions and to a relatively few communities, somewhat reduces the generalizations that could be drawn about the roads and their effects. This limitation, however, is not of sufficient magnitude to cause doubt about the findings of the present report. The impacts on the samples were well documented and they serve as useful indications of what can be expected in other projects.

Although the team produced some comparisons of costs and benefits, these were limited by the time available. Extracting verifiable data from small farmers, when they must recall "before" and "after" changes, is time consuming. Again, however, the lack of these data on the micro-economic level does not detract from the findings: there were indeed economic impacts in the opinion of these beneficiaries. The regional and shrimp studies, with their more indepth look at costs and benefits, supported the opinions of the farmers and the professionals working in the areas under study.

In summary, although there were some limitations, the uniformity of the results from this study demonstrates the utility of the findings. While more data might give more exact results, they would not change the overall conclusion: the roads have helped create economic and social benefits for the residents of the studied areas.

B. Project Setting

When the more concentrated road building began by AID and other agencies in the early 1960s, the almost completely agrarian nation, although accessible by the Pan American Highway, air, and ship, was considered to be relatively underdeveloped. Its people, mostly small farmers, engaged in commerce and agriculture but both to a limited extent. The possibilities of development, especially in agriculture and forestry, however, were evident and it was within this potential that the several rural roads projects were conducted.

1. Geographic Setting

Honduras is located in Central America and is bordered by El Salvador and Guatemala on one side and by Nicaragua on the other. Its 11.2 million hectares are, for the most part, characterized by mountains and rolling hills. The major level areas are along the coastal plains (64% of the farmed land); some small but important river valleys are located among the mountains.

It must be emphasized that the geographic setting for road construction is a difficult one throughout the mountainous area because of the steep slopes and rushing streams. These conditions raise construction costs for the roads, not only from the general topography but also because many bridges and major culverts must be included - the heavy rains cause drainage problems. In some parts of the coastal plains, the costs are high because of the threat of frequent flooding. Most of the highland area and some of the coastal plains, when viewed in the dry season, belie the need for expensive drainage systems but those are very cost effective throughout the country.

A considerable effort has been made during the years to improve the conditions: some dams, channel corrections and riprapping, and reduction of the road construction slopes. Despite these, however, many problems still remain. A chief detriment to these improvements has been the deforestation that has gone on during the period. Erosion is widespread and heavy. Efforts to curtail the indiscriminate logging are having some effect but the problem remains critical in many areas. A great deal more needs to be done.

2. Socio-Cultural Aspects

Honduras began the study period in a relatively weak position in many aspects of development. It had a high proportion of the poor, probably approaching 80% in 1960. This was reflected in the less than 50% literate, a high infant mortality rate, and a very low proportion of manufacturing activity as compared to agriculture.

a. Population

The present population is variously estimated but a recent release from the Department of the Census suggested 4.3 millions. This number represents a net growth of about 2.3% over the last several generations. A part of that growth, however, is due to the large number of refugees from Nicaragua, El Salvador, and Guatemala during the last decade; while the exact number is not known, it is generally believed to be substantial.

About 54% of the nation's population lives in rural areas; although this has changed several percentage points over the last two decades, the rural residents are still a major factor, emphasizing the need for rural roads. The cities attract more and more residents but the growth of commerce and manufacturing has been insufficient to provide employment to all of the newcomers. Those activities that strengthen the economic and social conditions of the rural communities, such as road building and furnishing more health and educational opportunities, remain a high priority.

Ethnically, Honduras was composed originally of three major groups: the local Indian population, blacks that came mostly from the Caribbean islands, and the Spanish. Over the centuries, the Indian population has mixed widely with the other two groups, leaving only a few scattered remnants of more or less pure stock except in Gracias a Dios Department, the former Mosquitia Territory. In more recent times, this has also occurred between the blacks and the Spanish mestizo but blacks still retain strong ethnic centers, especially along the Caribbean Coast. All three groups have been served by the AID rural road projects. The predominance of the mestizos throughout most of the country has caused them to benefit more but the others have not been neglected. The samples selected for the present evaluation included communities that were mostly Indian but few, that could be said to comprise mostly blacks. Many individual blacks resided in all of the areas but were more numerous in the Southern Region. Many other ethnic groups have contributed to the present population but their numbers have been relatively small; they still exist separately and in combination with the others.

b. Health

Honduras is one of the least favored countries in Latin America when measured by the usual social indicators. Health is no exception. Nevertheless, the changes in the health indicators since 1960 demonstrate that progress is being made (sources: Secretariat of Public Health, USAID/Health Sector Profile):

	<u>1960</u>	<u>1987</u>	
Life expectancy	52	62	(years)
Infant mortality	96	70	(per 1000)
Piped water	11%	25%	
Inadequate housing	88%	75%	

Unfortunately, both in 1960 and 1987, the rural population suffered even more than the country as a whole. Nevertheless, the changes across time must be emphasized. The rural roads programs of AID and the other donors have been vital to these changes. And since health changes occur slowly, the increased access to rural health centers, clinics, and generally to medical facilities is making and will continue to make a significant contribution to the health of the rural population. As will be shown in the results chapters, rural people now enjoy greatly improved communications with health services.

c. Education

The early education statistics were as problematic as those for health. The nation had few schools in the rural areas and these were far apart. Teachers were scarce and many of those laboring in the rural areas taught in one room schools with too many pupils, few books, and no supplies. The 1963 Alianza para el Progreso documents listed the statistics for 1960; the Secretariat for Education and the most recent USAID/Honduras Action Plan for Education supplied numbers for the most recent period:

	<u>1960</u>	<u>1987*</u>	
Illiteracy rate	89%	69%	(over age 10)
Primary enrollment	28%	45%	
Primary schools	1481	6205	(87% rural)
Primary classrooms	4260	15000	(78% rural)

While many programs have helped increase the positive aspects of education, the rural roads activities are high among them. The materials to build schools can be transported in, teachers can reach the schools, and the children can arrive at a reasonable hour in many places. There are still rural schools that have no

access road. There are also many areas where there are no schools. The improvement is noteworthy but there is still a great deal to be done.

d. Communications

Communications are somewhat more difficult to measure but at least a few indications help emphasize the plight of the rural people 20 years ago - and show that improvements have been registered. In 1960, there were six department capitals without telegraph; now there is none. The number of municipalities with no telegraph (and some with nearly no postal services) in the earlier times is not known exactly but older residents in many areas state they had no access. There are still many sizable villages without service today but messengers now carry telegrams and letters from larger centers to them, so that although the communication may take some time, it generally does arrive.

Telephone services in the rural areas were nearly non-existent in former days; and, indeed, there are still some large towns and villages that do not enjoy that service today. Hondutel has vastly improved its telephone network into the rural areas so that at least through the telephone central in the major towns, communications can be effected.

Rural roads have had an influence on these services. While some telegraph services were available before the roads, they were few and far between. But as soon as a road is constructed into a populated area, the telegraph is not far behind. Postal services also are begun or are sped up. Improvement is still needed but communications is being felt.

e. Political Participation

Although some numbers are quoted on voting percentages in the elections of 25 years ago, no absolute records were found. It is certain that few among the small, independent farm populace noted. One newspaper article (quoted in a recent La Prensa edition, stated that "presidential elections then drew less than 20% of the potential voters." In contrast, the last presidential election in Honduras was said to have counted the preferences of more than 72%. Where there were no roads, the candidates did not arrive, the ballot boxes were far away, and the rural people knew little about such things as elections.

Voting is not the only measure of political participation. Meetings, discussions, campaigning, and advertising are all a part of it. The 1987 activity can be seen in every village with a road - visits from candidates, the local partisans gather for

meetings, and signs are posted everywhere. The countryside has changed; it now participates fully.

3. Economic Perspectives

Honduras in the early 1960s was, as previously noted, known for its agrarian economy. Bananas, cattle, coffee, sugar, and some tobacco and cotton were its principal exports. Small industries, both agricultural and others, were making a good beginning under the Central American Common Market. Some import substitution industries were included. Unemployment was lower than at present but underemployment was chronic in the nation, sometimes estimated at about 50%. This latter problem was especially acute in the rural areas where the small, non-technical farming was for the most part subsistence, furnishing only seasonal work for the owners and contributing little to the money economy. There were many large farms and ranches, and these provided wage work for many small farmers and landless laborers; these larger holdings provided almost all of the domestic and export products offered for sale.

a. Economic Indicators

The view of Honduran economics in terms of its Gross Domestic Product (GDP) is one of the clearest indications of what has occurred since 1960. (See Figure I.A that follows and Table F.1 in Annex F for the actual numbers.) While it is certainly not alleged that the several rural roads projects of the Agency for International Development account for the progress, they most assuredly contributed substantially.

In 1960, the GDP, stated by the Honduran Central Bank in constant 1966 Lempiras, was 718 for the economy as a whole. It grew relatively slowly for the next two years and then took a large leap, slowed through 1967, and then began a steady growth period except for the weak 1980-1985 years. It then recovered its momentum, terminating in 1987 with more than 2,011 million at constant 1966 Lempiras. (The GDP in present Lempiras is more than double the constant.) Thus despite the two weak periods, the total change from 1960 through 1987 amounts to 280%, averaging exactly 10% per year. The growth for the 1986-1987 year was 4.2%, one of the best in Central America.

The AID roads benefit the rural areas most, thus the agriculture GDP is an important index of the roads' contribution to that targeted sector. (Again, see Figure I.A in the text and Table F.1 in Annex F.) As would be expected from the enormous fluctuations in the prices of agricultural products, particularly coffee and sugar, the progress through the years is much less uniform. Indeed, as occurred in most of Central America, the

1974 and 1975 years showed regression; it was not until 1977 that the agricultural GDP (constant 1966 Lempiras) regained its 1973 level. Even the 1980s have not been exempt from world prices and difficult natural conditions, recording a loss for a short time.

Despite these problem years, the agricultural GDP grew 246% in the 28 year period. A part of this rise was due to expanded production areas. Increased production per manzana also played a part, especially in coffee and the new export crops. The huge increase in farm to market and rural access roads contributed to both: supplies and services could reach the areas, the products could come out to the markets, and the agricultural services could reach the farmers. The rural roads played an important role in the improved agricultural GDP across the nearly three decades.

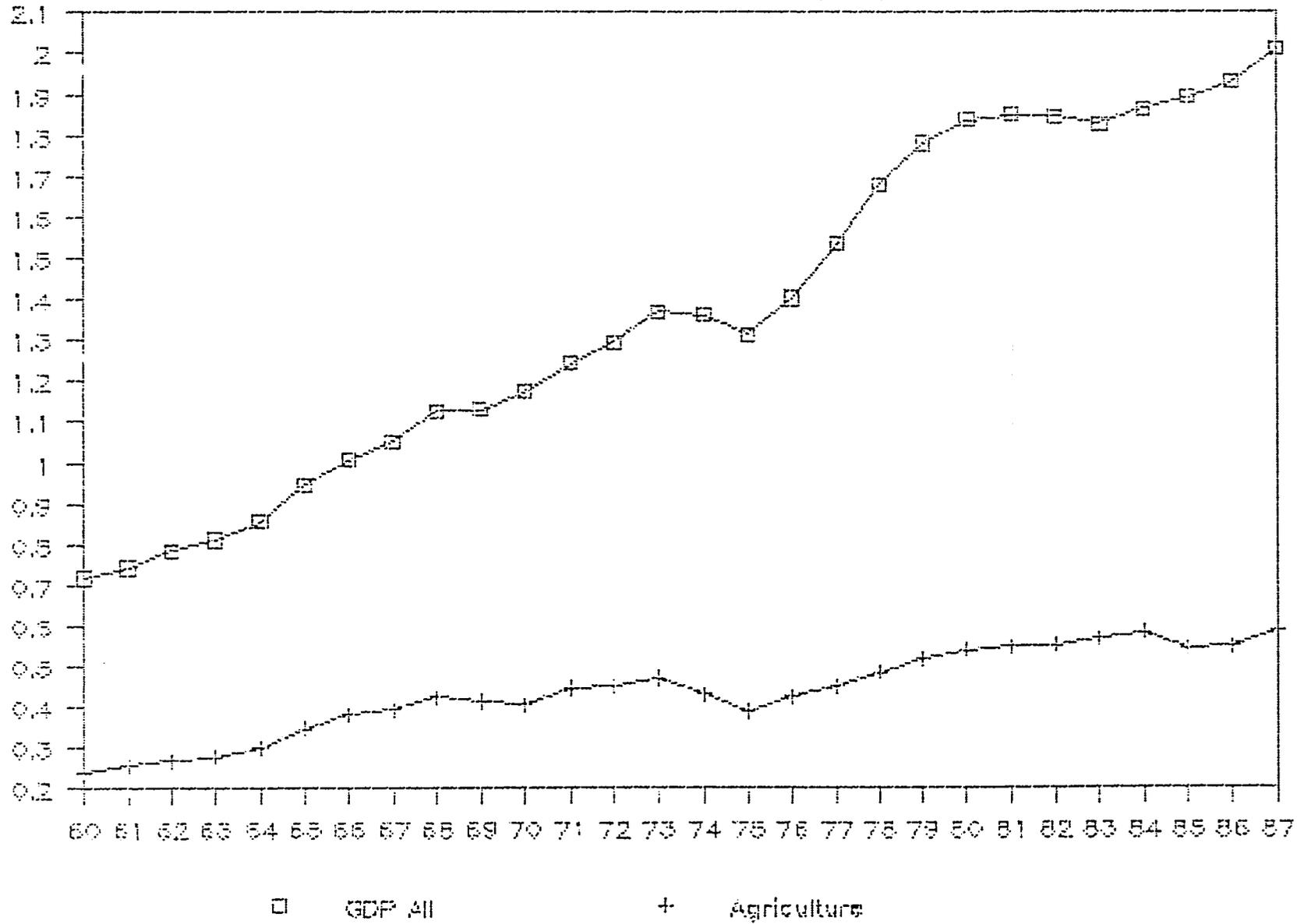
b. Agriculture and Agribusiness

The number of farms listed in the early census, when compared to those of today, do not permit exact comparisons. Many large farms were broken up through inheritance to several children; others were divided up for agrarian reform settlements. Even small farms have been subdivided among the surviving heirs. While in theory it should be possible to compare the number at least roughly, the lack of ownership titles beclouds the issue of how many farms there were then and how many there are today.

What can be said about rural roads and farms is that when roads are put through to an area with sparse population, farmers follow. Many instances of this were seen during the evaluation. Not all of this influx is positive. When those that move in are squatters and live from slash and burn agriculture, there may be inestimable damage to forests and to the soils. This is at least partially offset, however, with the increased services that enter the areas with the roads. Although in anticipation of the later results chapters, the "with" and "without" roads times contrasted in the survey showed almost immediate entry of agricultural service personnel. As those achieve their goals, soil erosion is lessened. When COHDEFOR, the forestry service, can enter, greater controls are possible on timber losses. None of the services has sufficient personnel or vehicles to totally accomplish its mission, they do enter and they do exert a positive influence - when and only when there is a road that allows them efficient access.

Agribusinesses of any size are scarce in the rural areas but they do exist in limited numbers in the larger towns and cities that serve them. A recent survey of a portion of the country, done by a contractor under a department of Natural Resources, found a 17% increase in the number of agribusinesses. An intensive study of

Figure I.A.: Gross Domestic Product
(In billions of 1966 Constant Lempiras)



the Western Region by Development Associates found an 11% rise in that area; but it also found that the vast majority of these was very small, mostly part time family operations. Those are important, however, and some will grow into larger enterprises. It is helpful, within the rural roads evaluation context, to note that in both studies, all but a handful were begun when a road made it possible to bring the raw materials (milk, heniquen, tobacco leaves, fruit) to the processing site (cheese, rope, cigars, conserved fruit).

Roads, of course, were not the only reason for these new businesses and for others that have been begun. The Rural Technologies Program, Natural Resources, Plan en Honduras, La Hermandad, and bilateral programs by the West Germans, Swiss, the United States, Belgians, and the Japanese all exerted a strong promotional and technical assistance role. Still, in almost every case, they arrived to help after the road was constructed. There is no doubt about the influence of rural roads in strengthening the advent/expansion of agribusinesses.

c. Industry

Industries are seldom located in the rural areas unless they are small and benefit from a local supply of material that allows a profit despite the scarcity of services. As with agribusiness, they are much more likely to be located in the cities and larger towns. Even then, however, they are mostly dependent on farm to market and access roads for the arrival of the raw materials and the marketing of the final products.

There are some exceptions, mostly those noted previously, that depend upon local supplies: salt and ceramics, as examples. Another exception, in many cases, is the lumber industry since these entrepreneurs create their own roads (often very detrimental to the local environment). Even the sawmills, however, depend on the farm to market roads in a majority of the cases. They can manage to bring the logs to loading areas but the full industrial complex necessary to cut these into lumber and other products is unprofitable without access for big trucks.

The roads have facilitated the stimulation of some successful small industries: roof and floor tiles, baked clay blocks, small tools and equipment, the Lorena stoves, furniture, and grain storage bins. These do not loom large in any national study of the degree of industrialization but to a family or group of families, and to their employees, they have meant the difference between poverty and a much improved living.

While a combination of an agricultural processing plant and an industry, the LEYDE milk products factory near La Ceiba in the Department of Atlantida, is a worthy example of what can happen when a small, local service organization benefits from a network of rural roads. The AID-SECOPT road projects have now connected many formerly isolated communities in this dairy area to the plant. Its collections range far and wide - its producers are now nearly 50 times as many as before the roads. The plant has branched into many products, not all of them related to milk, and is the largest private industry for its products in Honduras.

d. Commerce

Commerce is a way of life for Hondurans; the entrepreneurial spirit is strong here. The commerce may be a small tray or sack on the back in size, or it may involve a huge quantity of products destined for foreign export. Buying and selling is a vital addition to other employment or it may serve as the principal vocation of many others, including paid or on commission personnel. It is, in many areas, one of the few sources of outside employment for women and youth.

It must be noted that even when there are no roads, some hardy soul will arrive at a village or leave from one, on his daily sales rounds. It is equally noteworthy that when a road penetrates an area, commerce immediately experiences a sharp increase. (As the results chapters will later show, this usually is accompanied by reduced prices to the consumers.) Food, clothing, toiletries, tools, fertilizers, and many other necessities come into the villages by road; and the produce from those communities is purchased and leaves by the road. While some authorities decry these "intermediaries," they perform a valuable service, whatever their deficiencies.

Large commerce is also benefitting from the road networks. The smaller intermediaries or the farmers themselves bring products into a central market. Many of these larger concerns then process or package them, transport them to larger sales or shipping areas, and the money economy is expanded. The commerce in coffee is one of the chief examples. With roads, coffee production has increased perhaps double in the last few years; the large companies still remain but during that time, too, some small buyers have grown into important markets for the farmers, and a few into exporters. Potatoes, corn, beans, fruit, and vegetables have all received market enhancement from the roads. Commerce in products from and to the rural areas has been greatly enhanced by the rural roads projects.

CHAPTER II: THE ROAD PROJECTS

USAID/Honduras has been an active partner with the Government of Honduras in the construction of rural trails and roads for at least four decades. Indeed, the first known project, 1946, was conducted under the Alliance for Progress. No doubt there were some other efforts during the next several years but no records remain on them. A concerted effort began with a series of rural roads projects in 1964 and continues to the present.

A. Road Projects in Honduras

Many donors have helped towards a complete network of roads in Honduras, not only in the rural area but also in the towns and cities. Some have concentrated their collaboration on the Pan American Highway and other major highways throughout the country. The list of those known to date is presented in Table II.1. That listing shows the concern of the United States Government, that of other donors, and of the Government of Honduras for the system of communications in the nation.

As is readily apparent from Table II.1, the USAID/Honduras thrust has been in the farm to market and community access trails and roads. This major effort stems from the interest of the agency in rural development in general and in the economic improvement of the farmers. Every project begun since 1964 was aimed at facilitating the entry of production supplies to the farmers and the transportation of the goods produced to the markets thereafter. The selection of the sites for roads has always been based on studies of the economic potential of the proposed areas, on facilitating market access, and connecting these regions to sites where agricultural services are available: extension services, experimental stations, agricultural universities, processing and industrialization sites, and market information sources. Forestry, soil and water conservation, and the wise use of the natural resources have been of primary interest.

At the same time, the Mission has always reaffirmed its concerns with the economics of the rural poor. As will be discussed later, the Mission has aided independent and agrarian reform farmers via its road projects. Women, too, have been targeted with specific goals. Rural schools, health clinics, and population planning, too, have been included in the projects of the various offices of the Mission.

It is important, therefore, to view the rural roads projects as one of several related efforts within the Mission. That is, attempts have been made to attack the problems from several fronts at the same time, recognizing that a single concept

Table II.1: Roads and Highways Projects by Year Funded, Institution, Project Number, and Funding (US\$ 000)

Year	Project	Institution	Project Number	Funding
1961	Construct Ceibita-S.Barbara	FIDA	1-HO	8,428
1964	Build Puerto Castilla-S.Est.	AID	522-L-012	482
1965	Build R.Hombre-Potrillo	IBRD	B1-400-HO	5,975
1965	Build Ag Zones Roads	AID	522-L-013	5,027
1965	Continue R.Hombre-Potrillo	FIDA	71-1-HO	4,222
1966	Build Tela-La Ceiba Road	CABEI	PCTE-4	9,507
1967	5a Sec West+Reconstruct Study	IBRD	1B-490-HO	8,599
1968	Nueva Ocotepeque-Guatemala	CABEI	PCTE-16	2,719
1968	Danli-Las Manos Road	CABEI	PCTE-13	2,813
1968	Puerto Cortes-Guatemala Road	CABEI	PCTE-12	5,400
1968	Choluteca-Nicaragua Border	CABEI	PCTE-14	2,700
1970	Tegucigalpa-Danli Road	CABEI	PCTE-26	14,733
1970	Tela-La Ceiba Road	CABEI	PCTE-24	2,703
1973	Tegucigalpa-Talanga Road	IBRD	1B-896	18,672
1974	Agriculture Sector Program	AID	522-T-025	11,834
1975	La Ceiba-Jutiapa Road	CABEI	PCTE-93	3,800
1975	Airstrip/Airport/Access	CABEI	PCTE-90-0	3,335
1976	Ceibita-S.Barbara-Taulabe	CABEI	PCTE-175-1	8,700
1976	Jutiapa-Descombros Road	CABEI	PCTE-118-0	3,192
1976	Tegucigalpa-Talanga Road	IBRD	B1-134-HO	28,000
1976	Ag.Credit-Reconstruct Hwy.	AID	522-T-030	7,500
1976	Talanga-Catacamas	IBRD	1B-1324-HO	7,000
1976	Descombros-Planes-Saba	CABEI	PCTE-119-0	2,800
1977	Bridge, Aguan River	CABEI	PCTE-119-1	1,200
1977	Reg.Interconnector-Superv.	CABEI	PCTE-133-0	5,755
1978	Reg.Interconnector-Superv.	CABEI	PCTE-133-1	3,600
1978	Tegucigalpa-Jicaro Galan Re.	CABEI	PCTE-133-2	9,500
1978	Reg.Interconnect. Terminate	CABEI	PCTE-133-3	3,365
1979	LaCeiba-Jutiapa-Planes-Saba	CABEI	PCTE-93-1	2,400
1979	Roatan Road Study	CABEI	PO-555-0	325
1980	Tegucigalpa-Rio del Hombre	CABEI	PCTE-165-0	10,600
1980	Rural Trails, Access Roads	AID	522-T-035	21,700
1980	8a Road Project	IBRD	1B1-901-HO	28,000
1981	Ceibita-SBarbara-Taulabe	CABEI	PCTE-175-0	8,000
1983	Siguatepeque-Jesus de Otoro	CABEI	Unknown	10,000
1983	Tegucigalpa-Rio del Hombre	CABEI	PCTE-165-1	1,500
1985	Maintenance, Rehabilitation	AID	522-0214	20,000
1985	Asphalt Equipment	Venezuela		7,000
1985	Equipment and Training	Japan		32,000
1986	Construction, Various	IDB	HO-0096	2,626
1986	Counterpart for CABEI Loan	AID	522-0230	190
1987	Counterpart for IBRD Loan	AID	522-0323	8,896

Principal Source: Inter-American Development Bank

project has much less chance of effecting substantial development than do jointly planned activities. Indeed, several of the early projects were in conjunction with the Ministry of Agriculture and the National Agrarian Institute. Whether directly integrated multiple approaches in a single project or in several, the Mission's objectives have sought socioeconomic development.

It is unlikely that the table contains all of the loans and donations that have been made, especially in the early part of the period. There were probably several more counterpart contributions of AID through the Economic Recovery Fund and PL 480 but only the most recent records could be located during the time available. The list, however, includes a high proportion of the donor efforts and is thus indicative of the collaboration being made with the Government of Honduras to improve its network of communications.

Rural Trails and Access Roads was the focus of the study since the later one, Rural Roads II, constructions were too recent for solid impacts. In addition to these, sections of roads built by IHCAFE, COHAAT, and CDI-PTR were also examined. They are discussed in the narrative but do not constitute a part of the primary analyses.

B. Honduran Transportation: 1960-1987

The economy of Honduras developed slowly during the first half of this century and consequently, the government had little to invest in roads and highways. The earlier Ministry of Public Works built some and donors (AID in 1946, for example) helped with a few others, especially those interconnecting the countries of Central America. The railroads and ships were privately owned, mostly by foreign companies. When the economic conditions of Honduras began to improve, the need for more and better transportation became evident.

1. Roads and Highways

When the Central American Common Market gave impetus to international vehicle traffic in the beginning of the 1960s, Honduras listed its total network at 3,300 kilometers, only 112 of which were paved (3.4%). A 1963 Alliance for Progress survey listed only 383 kms. as all weather roads, suggesting that the rest were trails and rough roads.

A 1985 Inter-American Development Bank publication detailed the roads and highways of that time as totalling 16,350 kms. About 2,060 were paved (12.6%) and 7,890 (48.3%) could be traveled in all weather. The remaining 6,400 kms. were passable only during

the dry season. The 1986 and 1987 constructions, as can be observed from the repetitions in Table II.1, somewhat reduced the additions, perhaps 2,500 kms., but the all weather extensions were increased. The present system, as compared to two decades before, represents a remarkable achievement, especially when Hurricane Fifi and many other storms and floods are taken into consideration. The Government of Honduras has had a great deal of assistance but it, too, has invested heavily in its present network.

2. The Railroads

During the banana boom of late last century and early in the present one, private fruit companies built three, separate rail lines, all in the Northern Region. The three total 1,178 kms. The La Tela Railroad Company owns a line from La Lima to Puerto Cortes. The United Brands Railway Company (formerly Standard Fruit) owns a narrow gauge line that runs at the present time from La Ceiba through the banana plantation towns and to the port. The third line, Ferrocarriles San Pedro, is primarily a passenger carrier that was formerly for the workers and families in the banana industry; the latter line is suffering economic difficulties. The other lines appear to be operating at a profit and it is expected that they, at least, will continue to run. No plans for any expansion of the railway system are evident.

3. Water Transport

The coastal and international route carriers call frequently in Honduran ports. While many of the vessels are small, only boats, they provide an important connection for freight and passengers around the Caribbean and along the Pacific coast.

The most important port of the nation is Puerto Cortes on the Caribbean. The well equipped facilities account for 60% of all cargo entering and leaving Honduras. Smaller Atlantic ports at Tela and La Ceiba primarily serve the banana trade. Puerto Castilla, recently constructed, serves the agricultural zone of Bajo Aguan and lumber from Olancho. Only two minor ports are located on the Pacific, Enecan, San Lorenzo, and Amapala, important mostly for fishing vessels and small amounts of produce.

4. Air Traffic

The main airport is Toncontin, at the capital, Tegucigalpa. It is served by many airlines that provide domestic and international passenger and air freight service. The San Pedro Sula airport is growing in importance, serving that productive area. Smaller airports at La Ceiba and Roatan are connection

points for tourists to the Islas de la Bahia and the surrounding zone. Earlier there were many airstrips throughout the country but many of these have disappeared or are used primarily for crop dusting and charter flights.

5. Mule and Horse Transportation

Because of the very rugged terrain in much of the country, beasts of burden are still highly useful. Some areas cannot yet be reached by vehicles and the animals are vital to commerce to and from them. Even where there are roads, however, the animals continue to serve many families for personal and produce travel. As will be noted in Chapter IV, beasts of burden are not decreasing in many areas; the farmers declared the roads as more efficient for horse and mule transport.

C. Roads and Highways Projects

Table II.1 listed the many projects of other donors during the past two and one-half decades. Those are not the only efforts to improve the system; the Government of Honduras also invests in it. While neither these nor those of donors other than USAID/Honduras are the subjects of this report, they are described briefly as background to the evaluation since the combination has made the present stage of progress possible.

1. Government Projects

The present restrictive economic situation has severely limited the roads and highways the government can construct or rehabilitate. Few of the donor projects provide assistance to city streets, thus GOH must expend much of its available funds on these. The extremely rapid growth of the major cities Tegucigalpa, San Pedro Sula, Choluteca, Santa Rosa de Copan, and Comayagua - brings with it the necessity of many new streets and the amplification of others. The drain on the budget is heavy, leaving little for other areas.

The government has and is building some highways and reconditioning others. The Santa Rosa de Copan to Gracias of Lempira stretch is an example of meeting an important need. The La Paz-Marcala widening and paving project is still another. And there are a number of these across the country.

Few rural roads could be built if only the government resources were available. Further, the pressures from the larger communities and industries cause them to be favored in the selection of projects. The assistance programs for rural roads

are vital to the strengthening of agriculture and agribusiness, the economic lifeline of Honduras.

2. International Assistance

A listing of AID and other donor assistance was provided in Table II.1. The AID projects will be described in a separate section thus they will only be discussed in a general way herein. As a generality, until recently, USAID/Honduras was the major provider of help to Honduras on rural roads. Most other donors concentrated on paved highways and important roads to secondary cities in the country.

The Central American Bank for Economic Integration (CABEI) has financed the construction of many highways in the nation. One of its first concerns was the Pan American Highway, to facilitate the transportation from the United States south to Panama, and except for a problem stretch between Panama and Colombia, well into South America. The bank has and continues to exercise a strong influence in its sphere of highway construction. It has several projects underway or under consideration at the present moment. The paved highways it has built are important to the rural areas since they speed the products to market once they have reached the asphalt roads and the return of supplies for agriculture and commerce back to the rural sector. CABEI's stated purpose for the future is to continue with its present assistance on highways.

The Inter-American Development Bank is a relatively newcomer to the roads and highways field in Honduras. It presently has a substantial project with SECOPT, one that concentrates on farm to market roads, especially the more important, but secondary ones. It is currently negotiating some other construction with GOH and it is expected that loan agreements will be reached. These do not include the access roads to the more isolated areas. The bank also financed the Western Regional agricultural development project, PRODERO, that included the construction of some rural roads. These were few but did contribute to the network in that area.

The International Bank for Rural Development (IBRD) has funded both rural roads and highways in the past but with an emphasis on highways linking the major production areas with their markets. This international arm of the World Bank, with its interest in facilitating economic development, expects to continue with its present type of influence. While it constructs some roads, it seldom considers the smaller access to villages nor the shorter links of these to secondary marketing and transportation centers.

The Government of Venezuela, through its plan of assistance to its primary oil market countries, furnished asphalt for a useful project in Honduras. This help enabled some new paving and the repair of some streets and highways. The Japanese provided much of the machinery for the work with the asphalt and conducted intensive training for its use. This complementary project made it possible for SECOPT to advance more rapidly with construction and repairs.

In a previous context, mention was made of some bilateral help in road building, all of it in the rural areas. The Swiss financed the MARGOAS development project in La Paz Department which included the maintenance and some rehabilitation of existing rural roads within its project area. The AID roads there were in the best condition of any examined in this evaluation, showing the economic impact of continual maintenance.

The Belgians sponsor a project called CORASUR in the Southern Region. Through hand labor, it has built some rural access roads and performed some maintenance in that same zone. While the efforts are relatively limited, they have helped some farmers and shrimp growers. Financing for this project came from the European Economic Community.

A development project (COHAAT) financed by the Federal Republic of Germany has also contributed in some small ways to hand labor penetration roads and to the basic maintenance of a few others. The beneficiaries are impressed by the help.

3. The USAID/Honduras Rural Roads Projects

All of the AID roads projects have been designed to further the development of the rural areas. (See the listing in Table II.1 and the finance and kilometers constructed in Tables III.1 and III.2.) As noted in a previous section, they concentrated on the farming areas but did not neglect the auxiliary services of extension, research, marketing, and education.

The earliest known project connected the Pan American Agricultural School in Zamorano with Tegucigalpa, and improved some important nearby production area roads. Most of the rest of the early projects assisted through the provision of farm to market roads, especially those that linked with the secondary market and transportation centers, including a port.

One indication of the preoccupation of the Mission with the farm economy was the several combined projects. One was with the National Agrarian Institute and the others with what is now the

Secretariat for Natural Resources. Credit and technical assistance were provided to the beneficiaries the roads served.

A partial exception to this thrust was the rehabilitation of some of the farm to market roads ruined by Hurricane Fifi. While in general within the realm of the AID thrust, their purpose was of an emergency nature.

AID also helped with maintenance, both through equipment and training. One project had this as its primary aim and others included components of these two inputs.

Rural Trails and Access Roads (RR I) was a very large effort encompassing many rural areas in the nation. Some rehabilitation was done but by and large, the project constructed new community access. Farm to market roads were not neglected.

Rural Roads II is also a massive program and its effects will be long felt. The estimates on what percent of the work was in rehabilitation or reconstruction vary with the definition, from 40 to 60%. A part of this rehabilitation was required because the productive areas had experienced more growth than was originally contemplated, requiring that the trails and some of the roads be widened and otherwise improved. Unfortunately, some of the rest was reconstruction, brought on by the inadequate maintenance. Not all of the areas isolated by interruption have yet been brought back into the system and that is urgent in many cases. The new construction opened many new productive areas: crops, livestock, and shrimp. Zones with export oriented crops have been favored when possible. When the project ends, it will have accomplished a great deal for the development of Honduras.

Three other programs have benefitted from USAID/Honduras help. Although discussed earlier, they are mentioned here to provide a fuller description of the AID effort. The Rural Technologies Program (CDI-PTR), financed by the Mission, is constructing some roads in the Southern Region to provide access to communities where the organization is introducing appropriate technologies. The Western Region development program received bridge funding from PL 480 during the interim between IDB financing. It, too, has built some hand labor roads, also with the help of the World Food Program. AID also funded some portions of the IHCAFE and Global Village programs; those, too, have built roads within their regular programs. The Mission also furnished the GOH counterpart for an IDB loan and two bilateral programs; the first was a road construction program and the others included some in their activities.

D. Agricultural Development Programs

Rural roads and economic development are closely linked in most projects, not only of USAID/Honduras but also in those of the Inter-American Development Bank, the Central American Bank for Economic Integration, and the International Bank for Rural Development. Even further, many other donors have included the combination in their programs: Global Village (Mercy Corps), West Germany (COHAAAT), Switzerland (MARGOAS), and Belgium (CORASUR). At least two GOH programs unite the two factors: Honduran Coffee Institute (IHCAFE) and the Western Regional Development Plan (PLANDERO). Increasingly, organizations view the roads as indispensable to economic improvement, especially in the rural areas.

1. AID Economic and Road Development

In some of the earlier projects, the Mission funded programs that incorporated roads and other developmental activities, chiefly in agriculture but with some contributions to forestry. Since that time the two aspects have been addressed in separate projects. In addition, AID has provided financing for general or special operations in projects that included road construction. The present perspective is to develop parallel projects that will meet the needs of the various sectors.

a. Past Projects

During the last nine years, two major road construction and rehabilitation/maintenance projects have greatly furthered the network in the rural areas: Rural Trails and Access Roads and Rural Roads II. These have been described, thus no further details are needed.

At the same time, the Mission has had intense agricultural projects designed to further the advance of the rural sector. The Natural Resources Management Program, Agricultural Credit Assistance, Export Crop Promotion, Land Acquisition Loans, Small Coffee Farmer Titling, and Integrated Pest Management are important within these efforts. (The IHCAFE project will be described later.) Some of these are still in progress but most of them terminate during the next year. A Rural Technologies Program has been financed by the Mission for nine years. Its thrust is to bring appropriate equipment and techniques within the reach of the small farmers, as well as improve some facets of their standard of living. Several other projects were undertaken to strengthen the general rural economy via improved organizations: the Pan American Agricultural School, the export promotion agency, and the private agricultural experiment station are among these.

The composite of these rural programs has had far reaching effects on many sectors of the economy. They enabled the farmers to farm more land, obtain credit, improve their farming practices, and manage their production more rationally. Much of the impact from these is long term, several years, but already some important advances have been made.

As a generality, the road construction efforts served the same areas as those of agricultural production but in some cases, the coordination did not produce an optimum combination. Special efforts, through joint planning, are now envisioned as a means whereby direct linkages can be created between the two types of effort.

b. Future Agricultural Thrusts

While some of the various programs will be continued as general support to agriculture, the main emphasis for the next several years is expected to be that of the Land Use and Productivity (LUPE) project, now in its preparatory stages. Essentially, the goal of LUPE is to:

- increase the socioeconomic wellbeing of the rural Honduran family.

Its purpose is stated as:

improve agricultural production and productivity on a sustainable basis, including the management and effective protection of Honduran natural resources on which production depends.

The project will address the constraints faced by marginal and commercial farmers as they till the Honduran watersheds.

The primary components of the project will encompass a wide range of closely related activities:

Natural resource conservation in farmed watersheds (conservation techniques and structures, and on farm reforestation)

Sustainable hillside farming production (enhancement and diversification technologies for fruit, other tree crops, vegetables, basic grains, livestock)

Post harvest protection, processing, and packaging on the farm and in the nearby community

Facilitate marketing through information and credit

Improved small scale mariculture (shrimp) at the bases of the watersheds, and in combination with salt extraction

At the same time, two other divisions will be designing or modifying projects to further the goal and purpose of LUPE. Private Sector will continue its work in the development of viable agriculture related businesses and industries. Engineering is designing its anticipated Rural Roads III, with specific inclusions of those areas of concentration of LUPE, the "central corridor" of the nation.

2. Related AID Assisted Projects

A major effort during the past few years has been the improvement of the Honduran coffee farmers. This took two forms: that of helping the small farmers to obtain title to their land (Small Coffee Farmer Titling), and, the renovation of older coffee plantings, appropriate management of pests and diseases, and planting new areas in coffee (AID-IHCAFE). One of the constraints to the latter project was the lack of access to many of the existing farms and to the lands that could be profitably planted to coffee. To overcome part of this problem, IHCAFE was empowered to construct penetration roads (not directly funded by AID). The Mission did assist by the provision of farmer technicians, vehicles, credit, and technical assistance. The organization built a large number of mostly short accesses, did some rehabilitation of important coffee market roads, and performed some maintenance of these. While many problems have become evident with the heavy rains, these roads served to open up many new areas for Honduras' most important export crop.

The Western Regional Development Plan (first denominated PRODERO and later PLANDERO) was financed by a loan from the Inter-American Development Bank. As its first phase funding ended, the Honduran government had not yet met all of the conditions precedent of IDB. The Mission recognized a vital Natural Resources effort in this drought plagued area and provided bridge funding from PL 480 until the IDB financing could become available. That program built a few access roads during the first two years of its operation. During AID assistance, it reached an agreement with the World Food Program that would allow the construction of some manual labor roads via Food for Work commodities. About 105 kilometers were built or under construction by the end of July 1988. Again, while the funding for the roads was not directly by the Mission, the combined efforts helped make them possible.

Global Village (Mercy Corps), too, received some funding from USAID/Honduras in several phases of its operation. With Food for Peace, other donations, and strong village participation, many

roads have been built in the Yure River area of the Department of Yoro, and in the municipality of Belen-Gualcho in Lempira Department. These networks are quite extensive and have made it possible to enhance the production of potatoes and to plant fruit orchards, as well as the general development in basic grains and vegetables.

The Mission funded, as noted in an earlier context, the Industrial Development Center's Rural Technologies Program for more than nine years. That program, especially in the Southern Region, has not only delivered appropriate technology to small farmers but has also built several roads. The combination of roads with rural technology is one of the joint efforts toward farm improvement in the nation.

USAID/Honduras also provided the Honduran government counterpart for a substantial West German project (COHAAT) in the Southern Region. That program has constructed several roads and trails, and enhancing agricultural production. Mostly done via manual labor, these have had an effect on farms and shrimp cultivation areas.

Food for Peace, through Food for Work commodities, has also played a part in the building and improvement of some other, mostly shorter, access roads. A special program in the Florida municipality of Copan, in Belen-Gualcho of Ocotepeque, and in several other sites have contributed to the rural road network of the nation.

These many efforts, when combined with those listed in the beginning section of this Chapter, demonstrate a commitment of the Mission to roads and to agriculture. The continuance of the assistance through the contemplated projects will further enhance the production and marketing of agricultural products.

E. The SECOPT Organization

The Secretariat for Communications, Public Works, and Transportation (SECOPT) is the legal entity of the government charged with the construction and repair of city streets and of roads and highways. It consists of several general directorates and directorates, each with distinct functions under subsecretariats:

Subsecretariat for Public Works

- General Directorate for Roads and Highways
- General Directorate for Maintenance
- General Directorate for Civil Works
- General Directorate for Urban Development

Subsecretariat for Communications and Transportation
 Civil Aviation General Directorate
 National Geographic Institute
 General Directorate for the Postal System
 General Directorate for Transportation

Only two of these are of specific concern in this evaluation, those general directorates for roads and highways, and for maintenance.

1. General Directorate for Roads and Highways

This organization is composed of many departments and sections that plan, design, and execute the construction programs of GOH and the outside donors. The donors maintain implementation units within the directorate: AID, IDB, IBRD, and CABEI. These are primarily charged with coordinating the information and execution of the donor projects with the departments. The AID unit includes field offices responsible for the field work in support of the projects.

The Budget of Roads and Highways has grown steadily across the years. With the increasing number of loans and grants, the work has increased considerably, accounting for a high proportion of the total budget. GOH does put in some monies, partly from its own resources and partly from the counterpart funds provided by the Economic Support Fund and PL 480 local currencies.

2. General Directorate for Maintenance

This general directorate (DGM) was created in 1973 because that function was being neglected in favor of construction. Its responsibilities are those indicated by the name: planning and executing the maintenance for the roads and highways. It also services and repairs all of the equipment of the secretariat.

A 1985 report described the equipment of DGM as: just over half in good or fair condition and able to operate; 30% as in need of major repair or overhaul and was sitting idle; some 18% was inoperable and could not be repaired. In 1987, the Government of Japan loaned GOH \$32 million to replace almost one-third of the equipment. Some of this arrived and most of the rest is thought to be on shipboard toward Honduras. It must be pointed, however, that this is only a partial solution. In 1988, DGM estimated that even when that equipment arrives, it will have only the capacity to service 40% of the roads in the country, which is far superior to the approximately 5% capacity it now has.

The average budget for DGM from 1982 to 1985 was about US\$ 17 million. That was reduced in 1987 and again in 1988, even though the number of kilometers of roads it must attend grew each year. The original sum for 1988 was US\$ 20.5 million but through various actions, that was reduced to \$13 million. And this was in spite of heavy counterpart commitments on the part of GOH, money obligated in order to receive the loans.

F. AID Road Evaluation Process

The sample roads were chosen as the most representative of those constructed in the selected areas in conferences between the team, the local SECOPT construction and maintenance officials, and the regional offices or local agencies of Natural Resources. Roads from the earlier AID-INA project, Rural Trails and Access Roads, and Rural Roads II were included. Additionally, one set of IHCAFE penetration roads was observed as examples of that effort.

A questionnaire was prepared to gather the basic information on each road. An inspection form was used to record the technical data from the inspections and a summary form grouped the data from the several observations. (See Annex C for the instruments.)

All of the information was collected through direct inspections of the roads, always accompanied by one or more of the personnel of the local AID-SECOPT and/or from the SECOPT General Directorate for Maintenance. All of the distances were measured via the odometer of the vehicle since some of the documentation provided only estimates. Inspections were recorded at least every five kilometers; many others were conducted at bridges, culverts, and any site presenting unusual conditions. Field notes were taken during the trips and these were converted to fuller information each evening.

The observed characteristics were compared to the established norms for each type of road, taking into account the time since construction, traffic, and any unusual weather conditions. The materials utilized in the construction were examined for adequacy at the sites. All culverts, fords, and bridges were examined. The condition of roadside drainage was noted. Cuts were estimated and their slope noted, as was gradient of the road itself. Further details can be found in the inspection instrument and when vital to the discussion, are included in the narrative.

The sample roads from the two projects are listed in Table II.2, with their location, department, and length. Maps with the roads marked are included in Annex E.

Table II.2: Sample Roads Inspected by Department, Project, and Length in Kilometers

Road Designations	Department	Kilometers	
		RR I	RR 2
<u>Western Region</u>			
Florida-El Paraiso	Copan	25.5	
Las Flores-Nueva Armenia	Copan	23.2	
Lepaera-Las Flores	Lempira		11.5
Gracias-La Campa	Lempira	16.7	
La Campa-San Manuel de Coloete	Lempira	17.6	
Access to Cayquin	Lempira	5.3	
Sensenti-San Francisco Cones	Ocotepeque	5.6	
Sensenti-Azacualpa-La Loma	Ocotepeque	12.0	
Access to Gualtaya	Ocotepeque	3.2	
<u>Northwestern Region</u>			
La Esperanza-Togopala	Intibuca	21.6	
Marcala-La Esperanza	Intibuca	35.0	
Access to San Miguelito	Intibuca	2.1	
La Esperanza-Malguara-El Rodeo	Intibuca	24.6	
San Miguelito-San Juan**	Intibuca	39.3	
Marcala-Florida-V. Angeles	La Paz	22.5	
<u>Southern Region</u>			
Fortuna...La Tronconada	Choluteca		20.0
Monjaras...Guapinol	Choluteca		37.6
Namasigue-Tierra Blanca-Tajeada	Choluteca	7.8	
El Cohete...Puerto Nacional	Valle		21.7
Puerto Nacional...Valle Nuevo	Valle	11.0	
Total		273.0	80.8

* Apparently the first penetration was made by IHCAFE and that was later improved by AID-SECOPT.

** This road was built by GOH; some beginning portions were improved by AID-SECOPT.

G. Evaluation of the Sample Roads

The roads that had been in place long enough to have facilitated social and economic impacts were the primary targets of the study. The sample was mainly made up of those from Rural Trails and Access Roads, concluded in 1985 or before. The sample also included some that had been built earlier but almost all of these had been rehabilitated within RR I or RR II; these are treated, then, as components in RR I.

The details of the measurements are provided in Annex E in the summary forms completed after the myriad individual inspections. Distilling those down to the basic indicators, Table II.3 presents the conclusions of the engineer on the team in conference with the local SECOPT officials, of the number of kilometers by relative condition, of the most important components of the roads in Rural Trails and Access Roads. Although a scoring system was used and is included in Annex E, those calculations are not included here for simplicity of presentation.

Table II.3: Conditions of the Major Components of the Inspected Sample Rural Trails and Access Roads

Component	Condition			Interrupted
	"Good"	"Fair"	"Bad"	
Surface (kms)	78.7	46.2	10.2	4.2
Shoulders (kms)	21.7	57.0	40.8	10.0
Ditches (kms)	20.5	50.2	60.7	8.1
Drains (#)	23	80	23	12

The definition for "good" was that vehicles could travel over the road at a reasonable speed for a country road. "Fair" was applied when there were a few places where passage was difficult. "Bad" indicated that travel was possible only at a very slow speed and that in some places, the vehicle could continue only by passing through ditches, swift streams, or leaving the roadway. Interrupted was assigned only when a vehicle could not pass.

The terms were applied to the other components in much the same fashion. Proper operation for the conditions, a few problems, many problems, and the component did not operate, were the criteria.

The conditions are quite obvious from the table. The road surfaces had generally been constructed properly and remained in reasonable condition. The ditches at the roadside, however, were most often not well constructed or slides had blocked them, indicating that the original preparation had been faulty. As would be expected from the conditions of shoulders and ditches, many drains were only just functioning; they needed cleaning because they could not pass the sediment; they were too small or improperly placed. The drainage, as a system, requires a great deal of repair.

The interrupted roads included a wide variety of problems. One section could not be traveled because a bridge had not been built even though the plans called for it. On another road, a section had been left undone. Most of the others had been passable at some time but rains and lack of maintenance had converted them into barriers over which vehicles could not travel.

The Rural Roads II stretches were in much more serious condition generally. In part this was due to the excessive rains and floods. Often, however, the damage could have been avoided had the construction been better done. A very serious problem was evident in some lower areas, especially along the coast, where the roadbed had not been built high enough. Since the rains and accompanying flooding occur every few years, that eventuality should have been included in the plans. While only 17.6 kilometers were found to be interrupted, 83.4, nearly 37% of the 224.3, were judged "bad." And some were very bad. Again, the height of the roadbed was a part of the problem but the use of improper select material as a surface, and faulty bases, contributed to this high amount of unsatisfactory construction.

A higher proportion of the RR II shoulders tended to be well built but there were also many that were improperly built and not maintained. Drainage, however, was, in 47% of the observations, in bad condition. A part of this problem was the shoulders but too few and too small channels and culverts contributed.

The maintenance and AID-SECOPT office personnel that traveled with the engineer, and the rest of the team that used these same roads, agreed with the condition judgments. There are so many problems on some of the roads that traffic is slowed far below the speed expected on even a rural road. At the same time, some were in generally very good condition, permitting reasonable

travel. Those maintained by MARGOAS and some of those attended by IHCAFE were outstanding examples. They showed what maintenance can do on the roads, even when in some cases the construction was simple or even deficient.

H. Conclusions and Recommendations

It must be recognized that the team saw the roads under far from ideal conditions: torrential rains further damaging roads that had deteriorated because of lack of maintenance. Nevertheless, some construction problems were also in evidence; they had not been erased. Those problems caused by faulty construction should have been found during supervision and certainly during the final inspection. Some problems were cited in the inspection reports. What was not clear was whether a further inspection had been made to assure correction of the problems.

Recommendation

The team suggests that the inspection procedures be reviewed. The two review facets are:

- (1) Engineering should review its final inspection procedures to assure that they are totally covering the completed roads.
- (2) Since it is also possible that after making the inspections and recommendations that some are not being carried out, that phase, too, should be reviewed.

The problems of maintenance are so severe that some of the AID investment is lost and thus "rehabilitation," more often "reconstruction," must take frequently. The problem is complex and no easy solutions will present themselves. The basic elements in any plan should be as follow.

Recommendations

The USAID/Honduras Mission should, through policy dialogue and other means, bring GOH to realize the futility of the present inadequate maintenance and appropriate sufficient funds for continuance of service on the roads. This is, of course, a long term solution.

A medium term exercise should be that of assuring that any monies provided by AID for maintenance do not supplant the GOH budget. Cooperation with the other international agencies might be an effective means to achieve this. Counterpart funds, because of the nature of present local

currency regulations, are not being provided as agreed. Measures to remedy this problem would help toward better maintenance.

A short term solution must also be sought to assure that the roads do not continue to deteriorate even as they are being built. Some possibilities suggest themselves:

- (1) Provide funds for maintenance under contracts with trustworthy local companies.
- (2) The manual labor program should be continued; closer supervision will further strengthen this component.

The team also suggests that some medium to long term, efforts be pursued:

- (1) Continue to explore the mechanism of providing some maintenance monies under the direction of the municipalities; that will not be easy since those bodies do not now have that power.
- (2) Continue the efforts to strengthen the tax collection abilities of the municipalities so that some local monies can be used for maintenance.
- (3) Further decentralization of the maintenance districts is highly desirable; that must be accompanied, however, with a separate budget for them so they can better manage their own maintenance efforts.

These recommendations should not be taken as a condemnation of the AID rural road construction projects. Quite the opposite, the team found that a great deal of good construction had been done and that some of these roads were surviving despite the maintenance and traffic problems. Further, it found that the social and economic benefits accruing from the roads were very high. The roads are sincerely appreciated by the beneficiaries, by commercial entities that use them, and by the agricultural, health, and educational services that travel them in order to make their contributions to the development of the rural areas. This leads to a final, overall, recommendation:

Recommendation

USAID/Honduras should prepare and execute a new rural roads project and it should encompass as much of the not now served rural population as can be financed.

The efforts for agricultural and other rural development, the provision of health and educational services, and the long term economic stabilization of the Honduran economy will be well served by such an additional project.

CHAPTER III: INPUTS AND OUTPUTS OF THE PROJECTS

USAID/Honduras began its rural roads activities in 1946 with some improvements to roads already constructed but inadequate for the postwar increases in agricultural production. Little is known about these roads except that at least some of them were in the Tegucigalpa, Comayagua, and Zamorano areas. One informant stated that the major part of this effort was the Tegucigalpa-Zamorano road, now a highway, to facilitate the communications with the Pan American Agricultural School, begun in that same year. It is possible that some other rural roads were included in projects with other titles during the next 15 years but the information is no longer available.

A series of projects was begun in 1964 and there has been one or more in operation since that time. The present study dealt generally with this series. The concentration, primarily due to the demands of impact, were on those completed with sufficient time for the benefits to become obvious to the interviewees. The older roads, because of insufficient information about some of them, and due to problems with memory about conditions before they were constructed, are described narratively for the most part. Similarly, the current project, in which most of the roads are still in process or were just completed, do not lend themselves to direct impact evaluations.

A. Inputs

Six directly funded AID rural roads projects are included in the series. The basic input information on them is presented in Table III.1. These rural roads funded within, or facilitated by assistance to some portion of an organization's operations, are discussed separately for the sake of clarity; they have made some important contributions to local needs.

The financing for these six projects appears to total \$46,943,000 but in fact it was somewhat less than that. Funds were sometimes left over and were incorporated into later projects. The total is at least \$45 million. (Additional details on amendments and extensions are presented in Annex I, the Project Analysis Matrices.)

Table III.1: Identification of AID Rural Roads Projects by Year, Agencies, Project Designation, and Funding Level

Year*	Agency**	Project Number	Funding Level
1964	AID-RRNN	522-L-012	\$ 482,000
1965	AID-RRNN	522-L-013	5,027,000
1974	AID-INA	522-T-025	11,834,000
1976	AID-RRNN	522-T-030	7,500,000
1979	AID-SECOPT	522-0137	400,000
1980	AID-SECOPT	522-T-035	21,700,000

* Hereinafter, the projects will be designated by the year the agreement was signed.

** The present designations of the agencies are used even though in some cases, they had different designations at the time of the agreement.

Although the exact funding cannot be determined from the records of some of the projects, it is important, too, to note that the Mission has invested both loan and grant funds, and in direct assistance through USAID/Honduras personnel, to institutional improvement throughout the period. This assistance has included help on cadastre, maintenance, equipment repair, contracting procedures, construction technology, and general administration. Its funding for the central and several regional AID-SECOPT offices has been one of these efforts during the last two years. Some construction, maintenance, and supervision vehicles and other equipment were included in some of the projects. These contributions are important to the continued general activities of the Secretariat, as well as to the specific outputs of the Mission construction, maintenance, and rehabilitation objectives.

B. Direct Outputs

The outputs from the six projects involve a wide variety of accomplishments, which while they vary considerably among the six, also come together to form some important components. This section will concentrate primarily on the roads and the institutions but the chapters on the conditions of the roads, the economic impacts, and the socio-cultural impacts must also be perceived as parts of the outputs.

1. The Roads and Trails

The most clearly delineated outputs in this type of project are the roads and trails themselves. Additionally, they are the starting point from which all other outputs begin or which

provide the basis for those, such as institutional improvement. The basic information on these factors is shown in Table III.2. Some caution is advised on some of the data since there were, naturally, differences between "expected" and "realized." Since the final data were not available on some of the projects, the expected output details are used for them.

Table III.2: AID Rural Roads Projects by Beginning Year, Location, Number of Roads, and Extension in Kilometers

Year	Region or Department	Number of Roads	Length in Kilometers
1964	Colon*	5	54
1965	North Central/Central	16	602
1974	North	67	304
1976	General	48	400
1979	General	122	1383
1980	General	54**	1023

* Different sources disagree on this area; some say only Colon while others insist that some in the Comayagua area were also undertaken. (See the later discussion.)

** Some roads left in the 1979 plans were passed to the following project; neither the number of roads nor kilometers can be taken as absolute.

Attention is called to the 1964 project. As stated in the table note, there are differences of opinion on the content of that project. It is certain that a road was built from San Esteban to Puerto Castilla in the Department of Colon. A reference in a later document describes it as having been destroyed in Hurricane Fifi (1972) and then reconstructed under the 1974 project. The reference states that the new road approximately followed the route of the old. A COHDEFOR employee worked on one phase of that project when forestry was still in Natural Resources. He states that three fire prevention trails were built in Comayagua under the same project.

The sum of the six projects is 3,766 kilometers (2,354 miles). Had all the loan and grant funds been spent on the roads, bridges, and culverts, the overall average across the years (disregarding changes in the exchange rate) would be \$11,949 per kilometer, whether new or rehabilitated.

Not all of the money went for roads but within the early projects, on which there is no detail of cost breakdowns, there were other components. For example, a summary statement for 1974 states that "most of the funds were destined for agricultural credit." Other early loan summaries contained a similar statement. Present project roads, including bridges and culverts, cost between L.30,000 and L.45,000 (\$15,000 to \$22,500 at the present official exchange rate of \$1=L.2) per kilometer.

These costs, whether considering the 24 year average or the present rates, are reasonable under the circumstances of the construction. While Chapter II details the terrain and quality of the roads, it is useful to point out in this chapter that the areas in which these roads were built are, for the most part, very difficult. Many of them are in the mountains: rocky, steep, and broken by many creeks and arroyos. The installation of drainage, fords, and bridges is a costly part of the construction. (In recent projects, these structures have been bid separately.) In some areas, select materials are very scarce, requiring long distance hauling. Thus even though many of these roads were simple accesses, and some were only trails, the topography causes relatively high expenditures for them.

It must also be pointed out that almost all of the projects have completed the number of kilometers anticipated. In a few cases, of course, real distances varied from the estimates, bringing about minor variations - sometimes more and sometimes fewer, kilometers. That is to be expected. In a few cases, the final socioeconomic study gave differing priorities to the original lists and choices had to be made. Emergencies occurred, too, demanding attention to remedy urgent problems (Hurricane Fifi, for example). In the overall context, the projects met their targets.

2. Rehabilitation

One of the important points about the series of AID and other agency projects relates to the anticipated economic growth and subsequent project activities. In several instances, the first construction was of trails or simple penetration roads, as planned. As the agricultural production grew (this is also becoming the case where shrimp are grown) in number of and yields per manzana, the original accesses no longer served the areas appropriately.

Some examples of this include AID and IHCAFE construction into the communities where new coffee plantings were in progress and where renovation was strengthening the yields. Another example is that of the roads into fruit and potato regions. In these examples, as the increases in the harvests became evident, much

more vehicular traffic occurred. The simpler access was no longer adequate. Too, the heavier traffic caused the roads to deteriorate faster than planned. The need for rehabilitation became evident and the Mission projects responded, widening and otherwise improving the trails into roads.

Unfortunately, some of the rehabilitation was required due to inadequate maintenance. While those problems will be discussed in the next section, it is useful to include a mention of it in the present context. This does not reflect negatively on the AID projects; indeed, it represents responsiveness to the economic needs of the areas served, the basic premise of the roads.

In conclusion, the need for rehabilitation, in the vast majority of the cases observed, demonstrated that an output had been achieved. The trail was put in, production grew, and the transportation requirements increased. Rehabilitation is a logical part of the development sequence.

3. Maintenance

USAID/Honduras incorporated maintenance into several of the projects. The premise was, and is, that construction without upkeep poorly serves the objectives. In some situations, all maintenance activities would be considered an obvious task of the government and generally that is the expectation in Honduras. GOH, however, has suffered many economic reverses, some of them beyond its control: lowered prices for its agricultural exports, disasters such as Hurricane Fifi and the present flooding caused by Hurricane Gilbert, excessive military requirements brought about by events in neighboring countries, and a flood of refugees from those neighbors, only a small portion of which was attended by the United Nations. The circumstances are by no means normal.

The Mission, in an effort to assure that the roads it constructed were maintained, assisted the Maintenance Directorate in several ways over the years: equipment, vehicles, planning, and road workers. Maintenance was also sometimes listed by GOH as its counterpart funding.

Despite the assistance, the Maintenance Directorate has not properly maintained the roads. As detailed in Chapter II, some work had been done over the years, occasionally in substantial amounts. Other roads were given minor repairs by the road workers (many were observed at work during the field study). But far too many roads appeared never to have been touched and the local residents affirmed this.

The amount of maintenance output, therefore, can only be said to be limited. On the evaluation sample roads, the part to be done by the road workers appeared to be generally accomplished; only one was said to have no workers at all. Often, the manual labor was insufficient for complete maintenance; some equipment work was also required. There is also a group of roads, especially the trails, that were not accepted by the Maintenance Directorate, citing that they did not meet their specifications. Generally, this was true. In a few instances, it appeared to the team that the original construction had been satisfactory but they had not been accepted into the maintenance network. The combination of factors severely limited the expected output in this part of the projects.

Although again in reiteration of some sections of Chapter II, it is important to state clearly that the two maintenance districts and the subdistrict that fell within the sample were, to describe their capacity accurately, "poverty stricken." They did not possess all of the types nor the numbers of equipment required. They possessed one or no vehicle to conduct supervision of the road workers. They had insufficient personnel. The GOH cuts in the maintenance budget have made it impossible for the directorate to function adequately. This only explains the weak maintenance output. It does not eliminate the problem of the output that was not obtained.

4. Institutional Strengthening

The outputs from efforts to strengthen an institution are seldom easy to observe and even more difficult to measure. Personnel change positions, equipment wears out, and administrative procedures are modified over time. That does not signify that they are unimportant nor that they should not be done. With relatively major projects such as of the USAID/Honduras rural roads activities, the growth of the network alone demands purposeful efforts to assist the organization so that it can expand its operation sufficiently to accomplish the work.

As noted in an earlier context, the exact inputs could not be ascertained; some were more obvious and this section will concentrate on those. Although of only two years duration, the AID-SECOPT Project Implementation Units are in place and functioning. Two were closely involved with the study. One of the first items for emphasis is that these offices are in the field, have transportation and other facilities, and the personnel appears to be sufficient to carry out the major tasks. This, in itself, of course, is an input under normal conditions. However, when it is recalled that without these offices, there would be few if any planning and supervisory personnel directly located in the project construction areas, that input then converts itself into an output.

In each of the two implementation unit offices, the team had the opportunity to examine some of the work performed by the personnel. Socioeconomic studies had been produced. They were mostly of good quality. Engineering studies had been conducted; the descriptions, specifications, and rough maps were there for use. The supervision reports were available. Other examples of all of these were in progress. All of these represent important outputs in the work of constructing roads.

The team also saw the road workers (hand labor) doing minor repairs to the AID roads. They were in evidence in many sites and with few exceptions, were working hard. They possessed the tools (picks, shovels, wheelbarrows) with which to carry out their labors. It was reported that not enough have been available but that with time, the supplies will arrive. The repairs effected by these workers was reasonably well done for manual labor; they were of considerable help (even though in some places, equipment was needed to do some of the heavier earth movement).

Another output related to the road workers is the local employment that this arrangement has generated. Whether full or part time, these positions are of great importance in these often isolated areas where paid employment is scarce.

The personnel of SECOPT cited what to them was a crucial output of the Mission assistance - the provision of training, technical assistance, and equipment so that the Cadastre Directorate could carry out its survey and other measurement work. They noted that the main cadastre agency of the government helped little or none. Had it not been for the strengthening of the inhouse capability, the surveys would have been done slowly if at all.

Some equipment had been purchased in earlier projects but the team saw almost none that could be identified as from this help. Older employees remembered that some had been purchased and felt that no doubt many were still being used. With time and transfers from one area to another, they could no longer say which they were. They insisted, however, that the equipment had resulted in increased outputs in construction and maintenance.

Two engineers were interviewed that had received training from AID funds. They expressed great appreciation for the opportunity to study and averred that they were much better able to carry out their jobs than before. While an opinion, it stands as an indication of an output from the USAID/Honduras rural roads efforts.

C. Goals of the Projects

There were many variations within the goals and objectives of the six AID projects. The ex-post evaluation could not, of course, quantify these in absolute terms. In relative terms, however, the findings were as follow:

Goal: Increased agricultural production.

As Chapter IV, V, and VI will specify, there were substantial increases in production.

The increases, of course, are not solely due to the roads; many agricultural and other services contributed. Nevertheless, most of those services had not served these areas before the roads were constructed; their arrival, too, is at least in part, an output, which in turn facilitated the expanded and improved production of crops, shrimp, and livestock.

Goal: Greater commerce serving the areas.

Many businesses, although mostly small, were established in the served communities (Chapter IV). Small fruit canneries had been installed.

Some larger businesses were also established: the many new shrimp farms, the hundreds of manzanas of new coffee plantings and their processing plants, a sizable cheese and butter plant was in operation, and many others such as factories for tiles, blocks, tools, equipment, grain silos, and a small shoe factory.

The roads were not the only inputs that helped make these possible. Again, however, they were the beginnings - the other institutional (including AID) efforts arrived after the roads and the final results were positive outputs.

Goal: Improved access to education and health.

The details are given in Chapter VII but in summary, the access was definitely enhanced:

- . More schools and teachers.
- . More children enrolled in primary school.
- . More youth traveling to secondary schools.
- . More health centers.
- . Easier and faster arrival to these centers and to doctors and hospitals.
- . Many beneficiaries stated that they now had improved housing, potable water, and latrines.

While these are but indicators, they are important in the minds of the people served by the AID roads.

Not all of the projects specifically mentioned the rural poor but this was implied; only the most recent projects stated goals for women and minority groups. Whether or not these were listed in the project papers, there were benefits to these segments of the population. In very general terms, these outputs can be stated:

Rural poor: All of the project roads benefitted the rural poor; as stated in a previous evaluation, the larger farmers and businesses also profited, and often more, but that does not detract from the basic ingredient; the rural poor received many benefits.

Women: This segment benefitted mostly from improved access to education and health, in finding some additional employment, and in several ways enjoying a reduction in their hard work. This was not a strong goal achievement of the projects but an output was obtained.

Minorities: The vast majority of these populations are among the rural poor and their economic, educational, and health opportunities were enhanced. The two larger groups, blacks and Indians, directly benefitted from the roads for these were constructed in many areas where these live.

These three specifically mentioned groups perceived that they had benefitted from the road construction projects. They were as appreciative of them as any other portions of the population. Some, in differing degrees of output, were achieved for the rural poor, women, and minorities.

In the most recent roads projects, one other goal has been included: that of increasing the production and marketing of export crops. No quantification was attempted in this brief survey but many examples were found where "without" roads, none was produced and "with" the roads, the crops were being grown, sold, and exported. Chief among these were: cantaloupes, squash, watermelons, shrimp, sesame seed, fruit, onions, green peppers, and cashew nuts. Again, the roads were not the only influence but without them, these products would never have been produced and entered into the export markets.

In a very specific sense, there were accomplishments toward all of the goals stated in the several projects. They varied in the degree of achievement (sometimes due to inclement weather and other uncontrollable variables) but all were directly observed and verified. While it would have been desirable to have done more quantitative measurements, their lack does not detract from the general conclusion that the goals were in large part achieved.

D. Sustainability of the Efforts

Sustainability must be viewed from both the construction and the maintenance standpoints since new rural roads are still needed and because all of the roads, old and new, must be maintained if they are to last. At the present time, the Government of Honduras is investing in rural roads. In addition, several donors have programs in progress and some of them are planning further efforts.

1. Construction

There is a considerable interest among the funding agencies to construct new roads in the country. GOH, MARGOAS (Swiss), COHAAT (West Germany), the European Economic Community (manual labor roads in the Southern Region), the Belgians (mostly hand labor roads in the same region), the Inter-American Development Bank, the International Bank for Rural Development, and the US Agency for International Development directly and through several other programs. While this list appears impressive, the reality is that all of these efforts together will not satisfy the needs of the economic development in rural Honduras.

Chapter II discussed the SECOPT General Directorate for Roads budgets for the past several years. These have increased every year. While the various donors are furnishing much of these monies, GOH is also increasing its share. While there are, as noted, many more needs than the budget will cover, the situation for construction of new rural roads shows promise of continued activity.

One of the conclusions in several chapters is that the efforts to provide all weather rural roads to facilitate the growth of the agricultural and agribusiness economic sectors is that USAID/Honduras should develop a new project and implement it. With the concentrated thrust toward agricultural development, with special emphasis on export crops, it is imperative that the areas not now served receive road communications. Without the roads, the progress will be slow and inefficient. While AID should continue to encourage other donors to participate in this effort, the Mission should also develop its new project and put it into operation.

2. Maintenance

The picture is not nearly as encouraging for the General Directorate for Maintenance. As Chapter II detailed, the budgets for the last two years have been reduced. The maintenance was already deficient. Each year, many kilometers of new roads are built. The deficit, then, is compounded: an inadequate budget to maintain the existing roads, more roads being constructed, and less money to carry out the maintenance.

This situation exists even though several organizations are contributing to the maintenance effort. The Inter-American Development Bank and the US Agency for International Development both contributed funds for maintenance. Japan facilitated the purchase of equipment. MARGOAS conducts its own maintenance. The West Germans, the Belgians, and the European Economic Community conduct some maintenance work. Some of the rehabilitation component to the Mission's program serve, in fact, to again place roads into service, a very substantial maintenance effort.

Yet, with all of these contributions, many rural roads are in a bad condition and a few cannot be traveled at all, some in either the dry or the wet season. The recent heavy rains and those of some years ago, obviously cause unusual damage. A part of that damage, however, is due to inadequate regular maintenance. The combination of poorly maintained roads and the severe storms has wreaked havoc on many rural roads.

It must be concluded, therefore, that under the present GOH policies and budgeting, the prospects for sustainability of effort on maintenance are weak. Chapters II and IX contain some alternatives for consideration, chief among which is policy dialogue with SECOPT and the other intervening agencies such as SECPLAN, to remedy the problem of declining maintenance budgets. That is, for the long term future, Honduras must gear itself up to handle this work and some moves toward that eventuality should be made now. Decentralizing some of the maintenance work by directly giving budgetary control to the maintenance districts and/or to the municipalities is still another possibility. A stopgap measure, during the life of the AID projects, might be the inclusion of monies in the SECOPT budget but earmarked for contracted maintenance. It would appear desirable to attack the problem on several fronts at once: assuring immediate attention to the roads while pursuing one or more of the other alternatives as a longer term solution.

CHAPTER IV: ECONOMIC IMPACTS OF THE SAMPLE PROJECTS

The sample road projects and the communities selected for this study presented a wide range of agricultural and other related enterprises, topography, and climatic conditions. The nearly temperate mountains of Copan and Intibuca, the arid areas of much of Lempira and Ocotepeque, and the tropical zone of Valle and Choluteca offered the opportunity to view the effects of the rural roads within a variety of settings. The timber areas of the West and Northwest, shrimp cultivation along the Gulf of Fonseca, and the small industries scattered through the three regions added a special dimension to the potential effects.

The results presented in this chapter are micro-economic: the farmers, shrimp growers, and transportation companies. The wider effects of regional stimulus from the roads in the Northwest are given in Chapter V. Those specifically pertaining to the shrimp and salt areas as a whole, together with transportation, are detailed in Chapter VI. The combination of micro and macro studies offers an indepth perspective of the road impacts.

Three sources of information were utilized in this study: farmers, agricultural service technicians, and municipal authorities. The data from the farmers were used as the primary base for the micro-economics. These were supplemented with information from the other two. While all three sources usually agreed, there were some differences; those are pointed out in the discussions.

A. Agriculture, Roads, and Economic Indicators

The long history of the USAID/Honduras rural roads projects, in conjunction with those of other donors and the Government of Honduras, has led to an enormous increase in the rural network. As detailed in Chapter II, the system has multiplied nearly twenty fold since 1963. The service area covered is huge and is growing every year.

Obviously, rural roads are not the only incentive factor in the agricultural improvements during this period. As will be shown, however, they are an enabling factor. Once a road has been built, the government and other sponsors send their technicians into the area served, further facilitating new and enhanced farm production, marketing, and consequently, increased incomes for the rural population.

In Chapter I, the overall and agricultural economic indicators (Central Bank of Honduras) were presented. To set the stage, the basic picture is repeated. In the 27 year period, the overall Gross Domestic Product (measured in 1966 constant Lempiras) grew 280%, averaging 10% per year. Agricultural Gross Domestic Product grew less, 246% for an average of 9.1% annually; this was by no means uniform across the period (much of the increase occurred in the early years) but the total increase is encouraging. During that same 27 years, AID and other donors have constructed thousands of kilometers of rural roads. It was precisely when this expansion took place that agriculture surged forward. Thus despite reverses in world prices for Honduran export goods, agriculture expanded and improved.

B. Agricultural Enterprises

The micro approach to the economic comparisons centered in the "before" and "after" status of the sample farmers. Respondents were asked to recall facts about their farms in the days when there was no road (in a few cases before a trail or rough road was rehabilitated) and describe their operations. Subsequently, they were asked the same questions about the present. These data were compared and the results are herein reported. The farmers were also requested to answer some questions narratively to obtain further qualitative information about their farms with and without the road. The information from the agricultural services and the municipalities was generally corroborative; they often added dimensions that were not mentioned by the farmers since their views were more toward macro than micro.

1. Land Tenure

The 447 interviews were conducted only with those residents in the sample communities that conducted some farming or shrimp cultivation activities. Some of them worked elsewhere or had other economic pursuits in addition to agriculture (agriculture and farming will be used to simplify the narrative even though some of the respondents grew only shrimp). Members of agrarian reform groups were interviewed; their data are aggregates of the portion of each from the collective farming or shrimp cultivation plus any held individually when that was the case. Table IV.1 shows the average farm size of the sample farmers before and after the construction of the roads.

The change from the time when these farmers had no road to now (Table IV.1) is substantial, 3 manzanas more in 1988. Much of the increase is due to those in the Western Region where the total farmed rose 7 manzanas, nearly doubling the farming area. The rise was smaller in the other two regions but is still significant in terms of income possibilities.

Table IV.1: Mean Manzanas Farmed by the Respondents Before and After the Road Construction, by Region

Region	Farmers	Average Land Farmed Before Mean Mz	After Mean Mz
Western	118	8.7	15.7
Northwestern	146	6.4	8.4
Southern	183	6.3	7.5
All	447	7.0	10.0

One of the factors involved in the increase is the change for those few farmers (42) who had no land earlier. Most of these were in the Western Region and exactly half had joined an agrarian reform group that had acquired settlement land. Since all of them were residents of the area, the income generation from the land, as compared to scarce wage labor, represents a worthy improvement for the communities.

The questionnaires for the agricultural services and officers of municipalities included a third dimension, the future prospects. Almost all of these felt that there would be few changes in land tenure in the future: little land was left for new agrarian reform groups; land for purchase was scarce and expensive. One exception to this generality is that of shrimp farming; there is still some available government land on which this enterprise can be located if leases or permits can be obtained. Although only 4 in number, a useful trend was pointed out by a mayor, a forester, and two extension agents. They noted the continuing division of land holdings among the farmers' children. They suggested that over the long term, the holdings will become smaller. Six farmers in the study quoted reductions, all but one because of this family division of property. (The other was a woman who lost one manzana to the road construction.)

Although the numbers of manzanas are smaller, the changes in land possessed with title constitute an important indicator. (Table VI.2) The overall differences were 1.9 Mz before and 3.7 after. A small group of these were beneficiaries of the AID Small Farmer Titling as well as of road construction in Copan Department. Many others had acquired land with title through purchase in other, newly opened areas of the Western Region. That region's upward titled property movement was from 1.9 to 6.2, a sizable improvement.

Table IV.2: Mean Manzanas with Title among the Farmers Before and After the Roads Were Constructed, by Region

Region	Farmers	Average Titled Land Before Mean Mz	After Mean Mz
Western	118	1.9	6.2
Northwestern	146	2.8	3.9
Southern	183	1.1	1.9
All	447	1.9	3.7

The numbers of manzanas occupied without title before and after the road were also surprising in the Northwestern and Southern Regions - the amount has increased since the road was put in. (Table IV.3) Some of these farmers were also shrimp growers who had moved into government controlled coastal areas. Others were those who, when a road had been built, found government land unoccupied and occupied it. There was a decrease in the manzanas occupied in the Western Region - some due to titling and some to purchase.

The amount of rented land was not a major factor when the farmers in the Northwest and South are viewed as a group - less than 0.2 manzanas before - although it was important to the individuals. The averages changed little in the Northwest but grew to 0.7 mz in the South. In the Western Region, however, renting became much more common and more land was rented after the road. Just over 0.1 mz was rented before the road but 3.7 is the average now.

2. Agricultural Production

The tenure patterns were repeated in those for land dedicated to agricultural and shrimp production. That factor grew from a mean of 3.0 to 4.3 manzanas. The growth was small in the Northwest (4.1 to 4.6) and in the South (1.1 to 2), although these changes meant, in the words of the interviewees, greater income. Twelve of the respondents in the Southern Region had formerly only made salt and now utilized small extensions for shrimp growing; that addition, even though not large, brought income during the rainy season; they had earned little or nothing before. The acquisition of land in the West, however, was also accompanied by proportional changes in land in cultivation - before the road there was a mean of 4.6 and that rose to 7.5 in 1988. Almost all of the land purchased, rented, or occupied by the farmers in this region was put into crops.

Table IV.3: Mean Amount of Land in Cultivation on the Sample Farms Before the Road and Now, by Region

Region	Farmers	Land in Cultivation Before Mean Mz	After Mean Mz
Western	118	4.6	7.5
Northwestern	146	4.1	4.6
Southern	183	1.1	2.0
All	447	3.0	4.3

The increases in cultivated land indicate the possibility of higher incomes and that will be borne out in later sections directly addressing that aspect.

a. Coffee

Ninety-six farmers in the sample now have coffee plantings. Over half of them, 54.6%, now have more planted than before the road was constructed, and a third of these had had no coffee before. The figures on production increases were of little utility to this discussion since a high proportion of the land now in coffee had been planted during the last two years and production had not yet begun. All of them stated, however, that they either are experiencing greater yields or expect to do so when the harvests begin. They also reported that the new and improved coffee plantings were due, in addition to the road, to extension work by Natural Resources and the Honduran Coffee Institute, plus credit from BANADESA, Banco de Occidente, or Banco Sogerin.

A more secure analysis of the economic benefits of road construction when measured by coffee production was carried out in early 1988. Although it examined all of the roads constructed by IHCAFE, not just the sample areas, the findings are indicative of the cost-benefit expectations in coffee production areas. In Table IV.4, the increases derived from the manzanas renovated, and the overall annual net benefits are displayed for a ten year period. (The interim calculations are suppressed for simplicity of presentation.)

Even though the assumptions on which the benefits in Table IV.4 were calculated may be overly optimistic, it is clear that in a relatively short time, the simpler roads constructed by IHCAFE have the potential of engendering sizable benefits in relation to

Table IV.4: Number of Net Beneficiaries, Manzanas Renovated, and Net Annual Benefits from IHCAFE Road Construction, by Year

Year	Net Bene. (1 Mz)	Mz Renovated	Net Benefits
1	-	-	0
2	(1,666)	300	(499,800)
3	383	400	(551,500)
4	1,934	500	(99,600)
5	2,090	600	592,500
6	2,868	340	2,326,760
7	2,898	-	4,352,300
8	2,183	-	5,159,660
9	2,183	-	5,408,500
10	2,183	-	5,333,520
Net Benefit	-	2,140	22,022,280

Source: Tom Morris, Development Associates, 1988

Note: The original calculation was based on a longer road viability; that was shortened after the team's inspection of them in Copan and Intibuca.

their cost. While it could be assumed that the better roads done by AID-SECOPT would last more years, the overall perspective will change little since their construction costs are also higher. In summary, the cost-benefit ratios are favorable for roads built into coffee producing areas.

b. Basic Grains

The area planted to corn increased 37% for the 237 farmers now growing this crop; they also reported a rise in yields. Many of the others had just suffered from one to two years of drought during which little was harvested. Better seed and the addition of fertilizers were cited, all credited to Natural Resources and BANADESA. At the same time, almost all of them noted that these institutions did not work in their areas before the access was constructed.

Beans were cultivated by relatively few of these farmers and they had experienced only small increases in yields. The manzanas dedicated to this crop were few, averaging less than one manzana.

Rice was presented a similar picture; few of those interviewed grew that crop. These stated that they had had an increase in yields but the sample was too small for analysis.

c. Other Crops

Vegetables, however, presented a very different picture. None of the interviewed farmers had grown vegetables before the roads came to their areas. The extension devoted to them is still small but because of the intensity of their cultivation, the eight growers experienced substantial yields and earnings. Their costs are also relatively high but the profit was stated as just over L.867/mz. The small sample does not permit analysis in relation to road construction costs but there is an obvious benefit derived: technicians help the farmers, supplies can be brought in, and most importantly, the heavy weight of the product can be shipped to market by vehicle. In a potential area that does not now have a road but produces vegetables, the cargo cost by mule was cited as three times that by pickup and truck. The difference, they averred, is often equal to the margin between production costs and market prices.

Fruit production is limited to those areas temperate enough for profitable cultivation. The 17 respondents with commercial fruit orchards were mostly new to the business; only three had trees before the road. These latter had not experienced a rise in yields. The new orchards, however, were all of improved varieties and the growers received considerable technical assistance: the Mercy Corps group, those working with the Japanese Technical Mission, and a few with Natural Resources. Most of the orchards are just coming into production and the farmers view them as vastly improved over what they have seen in the old orchards. Roads, they stated, have been critical to the arrival of technical aid, to acquiring and planting the trees, and to marketing.

The technicians in the agricultural services were much more optimistic about the future perspectives for fruit and vegetables. They see a considerable expansion in both, particularly if irrigation and roads can be expanded.

d. New Crops

The farmers listed few other crops produced before the road was introduced: yuca, bananas, potatoes, sugar cane. Since access was facilitated, however, several new ones had been added: ayote, cantaloupes, watermelons, sesame, sorghum.

Among those grown for many years, two had increased in production: bananas and potatoes. All of the bananas (including plantains) were grown with coffee and yields could not be stated. They are for home consumption and for sale. Potatoes, on the other hand, have tripled in extension with roads. All of those growers enumerated were from Intibuca. Transportation of this heavy crop is vital to profit - indeed, as some reported, the trip by mule took so long that this factor alone limited how much they could produce. A great deal of work is being done by two organizations to improve potato production, Natural Resources and AHPROPAPA (a producers' association), which work together with most farmers. The extension agents in the area reported a large increase in plantings immediately after the road and some more gradual increments since then.

Among the new crops, sorghum was the highest in number of manzanas and in yields in the Northwest; yields were lower in the West because of the drought. This crop is usually planted in the second rainy season, which often has less rain, because of its resistance to dry weather. The 22 farms that had this crop last year produced it on 117 manzanas; they had planted none before and the growers stated that it had added significantly to their yearly incomes.

Only five of the sample planted cantaloupes and/or watermelons last year although many had done so previously. All five were in the Southern Region and had some form of irrigation, a must for their production. The five grew the melons on contract to packers who also provided technical assistance, supplies, and credit. The total income was listed as L.38,050, nearly L.2,000 per manzana last year although every one noted that they seldom realized that much. Nevertheless, for those farmers with suitable land and irrigation, these two products make the difference between near subsistence and commercial farming.

Sesame was grown on only two of the farms. They could furnish little information except that they "made a profit" each year and that little else would grow on the land dedicated to it. The two respondents bemoaned the lower price this year but stated they would plant sesame again. The agricultural agents see a dim future for this crop.

e. Livestock

The general picture for cattle production has two main features: farmers with a few head, mostly for home consumption, and the very large producers. None of the latter was interviewed. Most of the animals are mixed breeds with Brown Swiss and Brahman blood predominating. The evaluation team did not expect much increase in the cattle herds but the "with" and "without" roads comparisons showed otherwise. (See Table IV.5.)

Table IV.5: Number of Farms with Dairy and Beef in the Sample, by Number of Animals, Before and After the Roads

No. of Animals	No. Farms Dairy		No. Farms Beef	
	Before	After	Before	After
0	361	286	380	328
1	16	139	8	14
2	20	31	11	24
3	8	13	14	20
4	6	14	11	5
5	9	8	3	11
6	4	6	7	8
7	4	2	1	2
8	4	7	2	6
9	3	2	1	0
10	3	7	5	9
12	0	7	1	2
13	0	0	1	0
14	0	1	0	1
15	3	3	1	2
16	1	1	0	0
18	0	0	0	1
20	1	3	0	2
22	1	0	0	1
25	2	3	0	5
28	0	1	0	0
30	1	2	1	1
31	0	0	0	1
35	0	2	0	0
36	0	0	1	0
40	0	1	0	1
50	0	0	0	1
75	0	0	0	1
85	0	1	0	0
160	0	1	0	1
186	0	0	0	1
Total Animals	473	1267	373	1227

The number of dairy animals rose from 473 before the road was built to 1,267, an increase of 794 animals (268%). The change had taken place over a period varying from 2 to 6 years.

Beef animals likewise grew in numbers: from 373 to 1,227, a difference of 854 animals. This represented a growth of 329%.

The distribution of dairy and beef cattle varied little among the three departments before the roads were built. The growth in their numbers, however, differed substantially among them. The 1988 average numbers owned, by department, were:

<u>Department</u>	<u>Dairy</u>	<u>Beef</u>
Western	11.8	10.4
Northwestern	3.1	5.3
Southern	7.0	10.6

In part, these variations in averages are a result of available pasture, not only in fenced grasslands but also on the road sides and in the villages. Too, loose animals are a problem for some crops, especially grains, vegetables, and potatoes. The latter accounts for the small average numbers in the Northwestern Region; the former, availability of pasture, applies particularly to the Western Region.

As can be seen in Table IV.5, most of the surveyed farmers still had only a few cows, whether dairy or beef. Nevertheless, the rise boded well for new income. Probably more important, the increase in the number of farms with dairy cows was a good sign for the nutrition of the families. Production was not measured but the 62% of the farmers stated that yields had improved. The decrease in the number of farms with no dairy cows and the concomitant rise in the number of those with one, attest to the possibility of milk for the children.

Swine growing is a minor enterprise in the study areas. Before the roads were constructed, 79 of the farmers possessed 244 hogs, averaging about 3 per farm. (For the 447 farms in the sample, the average was only one-half animal per farm.) There was a rise in the number of hogs raised on the farms by 1988; 153 farmers now had 441, averaging about the same per farm as before. The change was in the number of farms with swine, not in augmented numbers per farm. The increases are useful to income and probably to family food supplies, even though the numbers are not large. Swine were more numerous in the Southern Region before and after the roads; they also increased more in that area.

Goats appeared only in the Southern Region sample. Three farms reported they owned a total of 18 before the road. By 1988, the number of owners grew to 13 with 136 goats. The increase is of importance to the families, especially for home consumption of milk and meat. Some small income is no doubt derived from this household enterprise.

Poultry (mostly chickens but a few ducks and turkeys) also grew in number between the "with" and "without" comparisons. Before the roads, 219 (49%) of the farms possessed 2,900 birds, about 13 each. The 1988 count of farms with poultry had climbed to 335 (75%) and they had 4,192 fowls, averaging about the same per family as previously. The most important change is the 116 new farms with poultry, a rise of 52%. In terms of family food, these represent a worthy improvement. Another factor is those with 30 or more, which could be termed a small enterprise: 17 were in that category without the road and 32 with. There were only small differences among the departments on the number of poultry owned with and without the roads and the proportions remained roughly the same even though they increased.

The livestock specialists in the Secretariat of Natural Resources and the Honduran Forestry Development Corporation do not view all of the increases in cattle and goats as necessarily beneficial. They cited over grazing, cutting of forests for pasture, and the subsequent erosion as potentially serious problems. Two livestock specialists insisted that improvement in blood lines, feed, and vaccination would be preferable, in most cases, to increased herds.

The evaluation team had anticipated that the number of farms with horses and mules would decrease with the advent of the roads. That was not the case. The "before" number was 110 (25%) farms and "after" was 141 (32%). Two explanations were given. First, some of the communities were so difficult of access before the road that even horses could not enter - all communication was on foot. Second, with the improved economy, more farmers said they were able to afford horses and mules. The number of animals also grew: 161 to 316. There were more horses and mules in the Western Region before and after the road projects; the growth was roughly proportionate and did not modify the relationship with the other two. Some of the discussions with owners of riding and pack animals provided unexpected information: the roads made travel by animal, and on foot, much easier than without the road. They cited less work, and less time involved in transportation by animal once the road was constructed.

In summary, livestock production prospered once the road was in place. In the opinion of the extension agents in the area, the change was due to two major factors: (1) improved income from crop production allowed funds to purchase and care for livestock; and (2) the greatly augmented campaigns on animal nutrition and care had encouraged farmers to invest in them. They noted, particularly, that the social agents were more numerous and spent more time teaching about nutrition and small animal production. The dangers to soil and forests, however, must be considered and remedied if sustainable production is to be obtained.

f. Ascribed Reasons for Agricultural Improvement

First, 369 (76%) of the 447 interviewed farmers stated that they now earn more income than they did before the roads came into their areas. The few that said their income had remained the same (none said it had dropped) blamed drought, lack of credit, death of the principal wage earner, or inflation for the problem.

Those who reported an increase (the actual amount could not be determined from the short interviews) cited several reasons. Some mentioned more than one cause thus the total percent is more than 100. The listings (aggregated to similar categories) corroborate much of the discussion given in conjunction with the crops and livestock.

<u>Reason</u>	<u>Percent</u>
Ease of transportation	46
Reduced cost of transportation	48
Increased agricultural production	61
More technical assistance	47
More businesses and sales	18
More access to credit	21

Obviously, many of the separate listings are interrelated. If these could be desegregated, a high proportion of the ascriptions of greater income could be traced to the roads. In the minds of the farmers, and even more so in the opinion of the agricultural services officers, the roads have had a very positive effect on agriculture and on the income from it.

g. Technical and Credit Services to Agriculture

A high proportion of the farmers reported technical assistance from one or more organizations - indeed, only 18% said that no technician had ever visited them. There were huge differences, however, between those citing such assistance before the roads and after. (Table IV.6) The farmers in the West and Northwest were somewhat more likely to have been visited than those in the South.

The area specific projects were named frequently in their areas of influence, as would be expected. The only widespread agency was Extension of Natural Resources and these encompassed agents for agriculture, livestock, and social development. There were few unusual patterns with the exception of INA, which was named only occasionally in the West, slightly more in the Northwest, and fairly often in the South. The overall picture of technical assistance is that of considerable attention to the needs of the farmers.

Table IV.6: Technical Assistance Institutions
Serving the Farmers by Percent of
Mentions (totals = more than 100%)

Institution	% Farmers Assisted	
	Before	After
Natural Resources (Ext)	17	61
MARGOAS Project	0	22*
IHCAFE	6	21
INFOP	1	17
Rural Technologies	3	9
National Agrarian Institute	4	5
Plan en Honduras	0	4
Vision Mundial	1	4
Caritas	3	4
AHPROCAFE	1	3
CORASUR	0	3*
AHPROPAPA	1	2
Peace Corps	1	2
COHAAT	0	2*
Save the Children	0	2
Natural Renewable Resources	1	2*
COHDEFOR	1	1
Others**	1	1

* MARGOAS was only mentioned in La Paz; CORASUR RENARE, and COHAAT only in the South.

** Others, with less than 1% in 1988, were CEDEN, La Hermandad, and the National Welfare Board.

The two columns in Table IV.6 give strong evidence of the influence of roads on the entry of technicians in an area. Only a few institutions were said to have visited before the roads while almost invariably, the percentages rose, sometimes dramatically, once the road had been built. The interplay of roads and technical assistance, cited previously by the AID/Washington evaluation team, continues to this day.

The credit pattern was much the same as that for the technical assistance institutions - few farmers had formal credit before the road and many more now. (Table IV.7) The financial institutions, however, did not cover as high a percent of the farmers - 31% stated they received no loans other than from family, friends, and credit for goods purchased at stores.

Table IV.7: Percent of Farmers with Formal Credit
by Mentioned Financial Institution,
Before and After the Roads

Institution	Before %	After %
BANADESA*	11	58
Intermediaries	61	42
BANHCAFE	4	8
Cooperatives**	1	4
Banco de Occidente	1	4
Banco Sogerin	0	1

* Many farmers ascribed their credit to Natural Resources, INA, IHCAFE, AHROCAFE, and AHROPAPA, but these institutions only assist, they do not loan directly; the loans were credited to BANADESA although they could also have been via the private banks.

** Five separate coops, including savings and loans, were cited.

As the note to the table explains, many other institutions were named but those do not directly make loans, they only help the farmers process the paperwork necessary to receive the loans. Savings and loans and other cooperatives are apparently becoming more active in the finance of certain kinds of investments. Four of the five listed were in the Western Region, one in the South.

The second listing, intermediaries, is of particular importance to this discussion. These are almost always traders who buy the farm products directly, usually under informal contracts. They frequently furnish working capital at the beginning and/or at the harvest, and the farmer promises to sell the product to the trader, who discounts the loan and interest from the payment price. Attention is called to the reduction in the number of mentions before and after the road was constructed. Since the interest rates of these traders are normally higher than those of the financial institutions, the reduction constitutes an economic benefit accruing from road construction.

Two municipal officers informed the interviewers that the roads had brought a branch of Banco de Occidente into their towns. They felt that this was a major improvement in farm credit.

C. Other Economic Activities

Other than direct crop and livestock activities, a wide variety of other economic endeavors was discovered. While the processing of agricultural produce was chief among them, there were many others. Few, however, were of major importance in the overall survey even though they often contributed significantly to the family incomes.

By far the most common processing activity was that of converting milk into cheese, butter, and sour cream. (Table IV.8) This processing was nearly always done as a part of the family dairy enterprise but a few purchased milk from neighbors to increase their output.

Table IV.8: Percentage of Processing of the Agricultural Products among the Sample Farmers

Product	Before	After
Cheese	3	4
Butter	2	2
Sour Cream	1	2
Bread/Tortillas	1	1
Mats (reed)	1	1
Fruit Juice	0	1
Canned Fruit/Veg.	0	1
Rope (henequen)	1	1
Total	9	13

A special feature of the items in Table IV.8 is that there is little difference between the before and after categories. The major reason given by the respondents was that there were few opportunities to earn cash when there was no road; the processing of a lighter weight product, cheese from milk for example, greatly reduced the transportation costs, thus yielding higher profits. The new items in the list (those with 0 in the before column) were said to have been introduced by some organization that entered the community after the road was constructed.

It is important to note that even though there was little change between the before and after columns, 62% of the processors reported that they had expanded their production, improved it, and were making more money now than before. They usually cited improved access to inputs and opportunities in new markets as the chief reasons for the increases, all attributable at least in part to the roads and highways.

There were few industries in the studied communities. One ceramic industry, existing from colonial and perhaps Indian times, was found. The women of the community operated it through a cooperative. A tile and block factory, assisted by Rural Technologies and La Hermandad, has grown substantially. One respondent spent part of his time as a member of a shoe making cooperative that was begun after the road had entered the area.

Although there were forests near some of the communities in the West and Northwest, only two interviewees reported any industrial activity from them. One cut firewood for sale, the other produced small quantities of hand worked lumber. Both ascribed economic benefits to the road.

Only three kinds of mining were mentioned: salt, clay, and lime. The first was most important and 18 of the interviewees either worked as a part of an agrarian reform cooperative in this enterprise or as independents. These had all worked salt before the road but they were quick to point out that much of their earnings had gone to transportation before the road came into the area. The lime producer had begun his operation when the road contractor made a cut through a hill, exposing the calcareous mineral. The clay extraction was coupled with the making of ceramics by the women of a cooperative.

D. Employment

Two sources were utilized to probe the changes in employment before and after the road construction: agricultural services and municipal officers. The employment for women will be treated in Chapter VII, Socio-Cultural Impacts; only the employment for men will be discussed in detail in this section. The two sources agreed almost entirely on employment opportunities; data will be presented combining the two except when a useful difference occurred. The exact amount of employment could not be determined, thus relative, qualitative summaries will be utilized. (Employment was defined as off the owner's farm.)

The first observation must be that almost all of the respondents stated that employment was usually occasional and though there had been increases, the majority of the work was low wage. The second is that a great deal of under and unemployment still exists in the communities.

Table IV.9: Incidence of Employment by Type and Percentage of Interviewees Citing Source Before and After Road Construction

Source of Employment	Before	After
Manual labor on farms	22	56
Manual labor on cattle ranches	18	23
Coffee harvest	6	11
Lumber industry	6	10
Transportation/mechanics/gas station	2	9
Tobacco planting and harvest	2	3
Fishing	1	3
Commerce/trading	1	3
Labor in salt processing	1	2
Labor on shrimp farms	0	2
Professional/paraprofessional	0	2
Housing/tile/blocks/lime/rope/mats	1	2
Barber/clerk/accountant/security	0	1
Sugar cane planting and harvest	2	1

The rise in farm and ranch labor was ascribed to more manzanas in production and more intensive cultivation. The increase in work in the coffee harvests was said to be due to the same factors (in Chapter VII, the employment for women jumped enormously in the coffee harvests). Two sources of work decreased: tobacco and sugar cane; this appears to be typical across these crops. Lumbering, both in the woods and in the sawmills, had existed before but the opening of roads had augmented this employment.

The new or sizably increased categories of shrimp, salt, transportation, professional/paraprofessional, and the trades are noteworthy. They were non-existent or at a very low level prior to the roads. Most of these are still small in numbers employed but they represent new opportunities for the residents of the communities.

An interesting difference occurred between the reporting of the service technicians and the municipal officers. Only the latter reported the clerical, accounting, barber, general office help, and some of the other trades. Their more concentrated experience in the villages probably accounts for these inclusions.

E. Transportation Enterprises

In addition to the benefits derived by the farmers and those in commerce from the road projects, transportation companies have also reaped economic returns. Two types were surveyed in the

communities (and in nearby towns when the transportation companies were headquartered there): passenger carriers and those that haul freight. These were not totally exclusive so the interviewers asked the combined enterprises to separate the two kinds of business. They were able to do so.

1. Passenger Transportation

Eleven companies were included in this survey but one of them had temporarily terminated service because his vehicle was in the garage for extensive repairs. One other declined to answer some of the questions although he provided replies to many others.

The basic facts about these enterprises include the following:

9 companies reported an average of 571 passengers per day
 8 companies reported making trips every day of the year
 Approximately 205,000 passengers are transported each year

The average price per ticket was given as L.2.30
 The yearly income amounted to L.464,000 per year

The mean cost of operation was calculated at L.206,000/year

The net returns for the enterprises is L.258,000/year

The enterprises use three types of vehicles for carrying passengers: cars, pickups, and buses. None of these uses their vehicles exclusively for the transport of passengers; they also haul freight and make personal trips with them.

Only two of these companies conducted any transport business in these areas before the roads were in. One had mules for carrying agricultural produce and some commercial goods into the communities. The other had a four wheel drive pickup in which he could haul passengers during the dry season only.

The roads have obviously permitted a sizable transportation enterprise, one which has not only benefitted the owners but also the residents. The latter are able to attend to business, seek medical help, and visit friends and relatives. Although low in volume, many passengers often carry small quantities of goods they have bought or produce to be sold. The combination is a benefit from the roads which continues throughout the life of the system.

2. Freight Transport

Sixteen freight companies were canvassed in the sample areas. Two use only pickups, one only trucks, and the other 13 use both. Two primarily haul coffee, one potatoes, two shrimp and fish, and one lumber; the other 10 have a very mixed trade of every kind. Four serve long distance customers (trips of four hours or more) and the others on local to nearby town or city. Only two do not take on freight during their trips; the others often pick up additional loads along the roads and highways.

The price charged per hundredweight varies from L.1 to L.8 depending on the distance with some surcharge for small amounts that entail extra stops or because of the conditions of the roads. The L.8 per hundredweight is for a road that takes 4 hours for 11 kilometers during the rainy season. The average freight charge amounted to L.2 per hundredweight, and excluding the high priced carrier, the average for 100 pounds per kilometer was about L.0.23 (\$0.10 with some allowance for varying exchange rates).

Only two carriers reported year round trips. One was a shrimp carrier that takes the product from the Gulf of Fonseca area to Puerto Cortes on the Atlantic coast, a journey reported to be about 8 hours. The other runs a regular route once per day except during the potato harvest when two trips a day are frequent.

The cost price information included the following, although 11 of the 16 carriers said they had to estimate since they do not "have an accountant."

Total estimated income per year = L.2,137,000
 Total costs were estimated as L.1,013,500

Net return for the 16 carriers = L.1,123,500

These costs do not take the owners' labor into account. The team doubts that the net return is so high. The lack of accounting data is probably more general than these small companies suggested. A return of more than 100% over costs is highly unlikely. Nevertheless, the owners view the companies as very profitable; there is little doubt about that.

It must be emphasized that not all of this income is totally new and therefore ascribable to the roads. There were previously many owners of horses and mules that performed the freight services. They are, for the most part, out of business on the roads that can be traveled all year round. Since the farmers

consistently reported that mule/horse freight charges are higher than by vehicle, the replacement not only serves the companies but also the farmers and owners of stores.

F. Ascription of Cost-Benefit

The calculation of cost-benefit ratios from the road projects was attempted but it must be stated from the outset that it is only a tentative effort. There were several difficult tasks with inputting the data and with determining what portion of the costs applied to the economic data. The figures given herein must be taken as indications of cost-benefit, not absolute figures.

Probably the most useful study data are those which simply show, in summary, some quantification of the benefits derived, as presented in the previous sections of this chapter:

<u>Category</u>	<u>Before</u>	<u>After</u>
Total land held by sample (mz)	3,129	4,470
Total titled land (mz)	760	1,654
Land in cultivation (mz)	1,341	1,922
Land in coffee (mz)	114	358
Number of dairy animals	473	1,267
Number of beef animals	373	1,227
Number of processing enterprises	40	58
Small industries	9	13
Sources of off farm employment (% named)	62	128
Passenger companies income/year (L.)	0	208,415
Freight adjusted income/yr (L.)*	68,000	561,750

* Estimates of labor, investment, and depreciation were made; these, plus an allowance for faulty memory, led the team to divide the reported freight earnings in half.

Special attention is called to the number in the sample: 447. While the proportions of the sample in the individual communities was very high, approaching 80% a calculation of what this meant as a part of the whole area served by the sample roads was tenuous but probably does not exceed 12%. Viewing these numbers in that light, then, gives an impressive set of benefits for the road projects.

Similarly, the ascription of costs of the roads was also problematic since some of them had been built and then rehabilitated, a few sections were constructed many years ago, and some few portions were no longer usable.

Assuming a five year life of the roads (the maintenance problems prohibit a longer span), the total income gained from only the comparative benefits in the previous chart, the total benefit derived equals L.125,406,225 for the period. A division of the road costs (including those applicable more than once but excluding whatever little maintenance costs were involved) would give a cost figure of L.16,384,000. The ratio would then be at about 1:7.8, or 25%. Since some of the roads will last longer than the five years used (lowering the cost factor), and new/expanded enterprises will raise the benefit portion of the ratio, even with these very conservative calculations, the roads have produced a substantial economic benefit.

G. Conclusions and Recommendations

The study of these sample roads and some of the villages they serve showed that the network was indeed constructed where there was a potential for economic benefits and that those benefits are already in evidence. The AID-SECOPT and the small sample of IHCAFE roads are serving their intended goal and purposes. Every community within the study had progressed economically, thus not only the network but also the entries to these communities had equalled or surpassed the anticipated benefits.

The socioeconomic studies on file in the Mission and AID-SECOPT offices in the field were in the files. Those in the AID-SECOPT field offices were complete and well done. Those in the Mission included summaries of field reports, and while somewhat brief, correlated with those in the field. Copies of the field office reports were filed but it was often difficult to relate them to the summaries.

Only two recommendations need be made concerning the economic studies and the road projects:

- (1) The Mission and AID-SECOPT should continue their efforts to conduct socioeconomic studies for new construction and for rehabilitation projects. They have served well in the selection process.
- (2) To complete the files, once a road site has been selected, a copy of the field study should be attached to the updated summary in the USAID/Honduras files.

The second recommendation is perhaps superfluous since the field studies can always be consulted in those offices. Should an office be moved or eliminated, however, later documentation might be difficult to obtain.

CHAPTER V: NORTHWESTERN REGIONAL STUDY

For the developing countries, one of the basic objectives is that of food production destined to satisfy the growing demands of the population. In the same way, it is important to emphasize the role of the activities in agriculture and the repercussions of positive economic development such as the intensive use of labor, the development of rural areas, its impact on the balance of payments as a source of hard currency from agricultural exports, as well as for investments from the sector.

During the last few decades, one of the alternatives for facing the problem of sustained agricultural development has been the implementation of roads projects. This is the subject of the present ex-post evaluation. This kind of study permits the identification of the successes and failures of the projects and the causes of them so that the knowledge serves not only as a corrective measure but also as indications of how to improve the planning of future projects.

From this point of analytical view, it is crucial that attention be concentrated on the determination of any repercussions that road projects may have on the increments in economic activity. It is important to note that when changes are outside agricultural development programs, or independent of community control, it must be assumed that they are for improvement, reconstruction, or construction of the roads. It is with this in mind that the present study of the Northwestern region was undertaken.

A. Agricultural Production in the Region

The agricultural production in the areas of the sample roads (La Paz and Intibuca Departments) is composed primarily of basic grains (corn, beans), coffee, potatoes, cattle, and hogs. There are some other productive activities such as vegetables, the first products of diversification. These are not frequently found. In fact, production is still traditional, limited, mostly non-commercial. Nevertheless, the cultivation of potatoes and coffee in this region has provided important produce for the nation.

The foregoing is the result of the comparative advantages in certain subareas, primarily due to climate, in comparison to other areas, for the growth of these products. In addition, there exists a high possibility of intensifying these crops as well as the development of other new ones. Among these, for this region,

are dairy cattle and temperate climate fruit, neither of which is sufficiently developed technically at the moment.

This area is also favored by forestry resources which offer an economic avenue even though the lack of good farm land makes the forests desirable for agriculture. The soil characteristics determine that more than 88% of that resource is primarily apt for forests and only about 1.3% is apt for intensive cropping. The rest is in a combination of occasional crops but mainly in pasture. The small amount of farming land does not imply that the best use is now being made of it. On the contrary, many steep slopes are now in grain cultivation while some valley soils with greater capacity are used in extensive cultivation or in pasture.

As a consequence, and despite the favorable factors cited for the area, there are many difficulties in providing the vast majority of the population with minimum subsistence. The unequal distribution of the land leaves many with no means of producing food nor of finding paid employment.

On the other hand, the national food production problems are also evident here. The necessary techniques are seldom found and with the rapidly growing population, food has become a crisis. The factors that explain this situation, here and elsewhere in the nation, are based mostly on the structural conditions in which agricultural production has developed.

The distribution of the principal resource, the soils, shows that 84% of the farmers possess less than 10 hectares of land. The average farm size is 2.9 hectares. This group has only 30% of the land in the region.

As a general rule, nearly every farmer plants corn, the principal crop of the area. It is important, too, to state that a very high proportion of the farmers plant only corn, a food staple for the families. For most of these, corn is totally consumed in the home. This group comprises 73% of the small producers (less than 10 hectares) in the study area. These same farmers also own the poorest land - the sides of the mountains. These areas were almost completely deforested in some zones, bringing about a considerable destruction of the soil resource and making subsistence more and more precarious.

The rest of this small farmer group (27%), besides basic grains, has some land in a commercial crop: potatoes or coffee. These are usually located in more fertile areas, such as potato growers who have some valley or gently sloping land. Even for these farmers, however, there are high risks of soil depletion because of the lack of adequate practices of soil conservation.

The region's crops, in order of value, are corn, coffee, and potatoes. (See Table V.1.) Despite the dominance of corn, a high proportion of it is consumed at home. Potatoes and coffee are both cash crops, contributing most of the money for the purchase of necessities and for reinvestment.

Livestock production is of much more economic impact in comparison to crops. It is, however, concentrated in the hands of families with greater economic means. These have more land and many more cattle. Small livestock producers are limited by land for pasture; the lack of technical alternatives do not permit them more than a few head.

Forestry utilization is principally carried on by specialized businesses dedicated to the production of lumber. Very few farmers, whether large or small, participate in this endeavor. A few individuals and agrarian reform groups harvest some trees for firewood and posts as a secondary activity.

B. The Study Procedures

Generally an ex-post evaluation is conducted once the project is completed. The fundamental purpose is to identify the products and measure their global impacts so that lessons learned may be applied to future projects. In the present case, not all of the construction had been completed on all of the roads but some had been done with sufficient time so that part of the effects could be measured.

The interdisciplinary research team, after previously studying the pertinent documents and developing the formal instruments, conducted on site interviews in the sample communities within the Rural Roads I project area, where construction and reconstruction had been implemented. Observations supplemented the interviews, giving a broader view of the commonalities and diversities of the sample communities. The study trip to the Northwestern Region was six days in length with visits to some 14 communities in five municipalities of two departments.

In general terms, the roads constituted the basic sample. The study communities were selected as subsamples of the areas served by these roads.

The selected roads were the following:

Intibuca Department

- La Esperanza - Togopala
- La Esperanza - Rodeo - Azacualpa
- La Esperanza - San Miguelito
- IHCAFE roads near San Juan

La Paz Department

- La Esperanza - Marcala
- Marcala - El Cerron - Florida

The first task was to establish the parameters within which the study would be carried out. This began with the identification of the residents that had lived in the region before and after the construction or rehabilitation of the roads, because of the economic and social factors to be investigated.

In verification of the obtained information, data were also collected in the municipal and department capitals to which the villages pertain. These interviews, too, utilized the comparative before and after approach. The variables for the regional study were production, income, areas cultivated, transportation, and marketing.

C. Agricultural Production

Production is restricted here as elsewhere to the conditions of climate and soil. In this case, they permit a wide variety of crop and animal enterprises. The forests, too, have a great deal of importance for the region.

The traditional crop of the area is corn, followed by beans. These were formerly destined for family and local consumption. Only occasionally was corn used for animal food.

Vegetables are produced mainly as a commercial crop. The principal product is the potato. Cabbage and lettuce follow. Tables V.1, V.2 and V.3 present the situation of the crops by department, with and without the road. The data on area planted to the crops and their yields are included, as well as income.

Small extensions are planted to gardens, strawberries, and apples. The Japanese Technical Mission has stimulated their production through experiments, nurseries, and demonstration plots. This group is also experimenting with green peas and asparagus as a potential crop for the region.

Table V.1: Changes in Production of the Principal Crops between the Before and After Periods of the Road Projects: Intibuca

1974		<u>BEFORE</u>	
	# Manzanas	Yield/Ma (qq)	Production(qq)
Corn	4,268	7	29,876
Beans	1,045	5	5,255
Potatoes	356	150	53,400
1988		<u>AFTER</u>	
Corn	8,218	13	10,834
Beans	1,873	14	26,222
Potatoes	2,151	250	537,750

Source: Regional Directorate for Natural Resources, La Esperanza

While there were few regional statistics available, three institutions provided indicators of progress before and after the roads. In Table V.1, there are three components: increase in manzanas planted in each crop, yield per manzana, and the production. When "before" is compared with "after," even though the partial cost-benefit ratios cannot be calculated with confidence, the profitability rise is obvious.

Corn	254%
Beans	502%
Potatoes	1007%

The roads had a decisive influence on the economics of the area.

Table V.2 gives the dramatic changes from the accelerated development of the new crops when the road was opened. Coffee plantings require four years before they produce a full harvest. IHCAFE estimated a value of L.7 millions by the end of that period in the San Juan de Intibuca area.

The area of Marcala in La Paz has benefited from a triple development thrust. A simple road was opened, then widened and improved. The MARGOAS (Swiss) project then stimulated agriculture and at the same time maintained the roads. IHCAFE has worked actively in this same area.

Table V.2: Coffee Production in the San Juan de Intibuca Zone,
Before and After the Road Construction

1974 Before	# Mz.	Yield/Mz.(qq)	Production(qq)
Coffee	-0-	-0-	-0-
1988 After			
Coffee	350	20	7,000

Sources: 1974 Agricultural Census; 1988 information from IHCAFE,
San Juan de Intibuca

The results have been very satisfactory. The area presently
generates about L.10 million as compared to "before."

Table V.3: Manzanas, Yields, and Production Before
and After the Road, Marcala of La Paz Department

1974 Before	# Mz	Yield/Mz (qq)	Production (qq)
Corn	764	14	10,696
Beans	346	12	4,152
Coffee	448	12	5,376
1988 After			
Corn	1,425	35	49,875
Beans	650	25	16,250
Coffee	448	25	11,200

Sources: 1974 Agricultural Census; 1988 information from MARGOAS
Project, Marcala, La Paz

D. Indications of Regional Cost Benefits

The partial report on the agricultural production generated since
the opening of the roads is ample evidence of the amplitude of
the cost-benefit ratio. The examples, perhaps pertaining to 20%
of the served area, show that the roads will have paid for
themselves five times just in coffee, by 1992.

The regional effects of increased harvests of corn and beans are more difficult to quantify since a high proportion is consumed by the farm families. An assumption will be made that the increase does move into the local and other markets. Potatoes are mostly for the market. When the higher value of all three products are added to coffee, and adding in the costs of roads not now serving coffee, the overall cost ratio is 1:24 for a five year period. Those roads that last longer, and many will, improve the benefit ratio proportionately.

Beyond this favorable finding are the services and commercial benefits to the region, as estimated by the local government officials, BANADESA, and Banco de Occidente, from their records, for Intibuca:

<u>Type</u>	<u>1987 Value (L.)</u>
Transportation	1,268,000
Stores	12,612,000
Trades activities	14,120,000
Service offices (salaries)	8,000,000
Sawmills and logging	11,000,000
Banking, Savings & Loans	13,500,000
Trades, personal services	<u>1,000,000</u>
TOTAL	61,500,000

The informants repeatedly emphasized that these were conservative estimates for 1987. The important point is that they insisted that these amounts are probably ten times those of 1980 when the first roads were completed.

Intibuca is an important beneficiary of roads in that although their construction costs were not high, they literally opened the whole department to the rest of the country, thus the stimulus was great. Additional roads, then, while vital to the continued economic growth, will not have the same proportional effects. A combination of roads, credit, and technical assistance will, however, further augment this starting beginning.

E. Technical Assistance for Agriculture

A major factor in the growth of agriculture is the availability of technical assistance, together with the roads. In fact, the services, for the most part, did not arrive until the roads were in place. Every one queried except INA had begun work in the communities only when they could arrive by vehicle. Even INA had greatly expanded its visits to its groups when transportation was facilitated.

The fundamental approach to technical assistance given in the area is through groups, whether agrarian reform or independent farmers in agricultural committees. The work with these groups has, in conjunction with the roads, stimulated the families to additional self improvement, reported Natural Resources, the National Agrarian Institute, and the National Institute for Professional Formation. Additional benefits will be realized with time.

Further improvement of the crops requires more time plus additional increments of fertilizers and pesticides. These practices are being taught by Natural Resources, the National Agrarian Institute, and the National Institute for Professional Formation. A great deal of work is done on potatoes by the Honduran Potato Growers' Association. Improvement in livestock programs is being fostered by livestock extension specialists, veterinarians, and the Farmers and Cattlemen's Association. Crops and livestock will continue to improve in production.

Another service that is helping farmers increase their production is that of the Agricultural Mechanization Program (PROMECA), run by Natural Resources. INA also has equipment that can be used by the agrarian reform groups for major land preparation. The larger farmers have machinery of their own. Extension notes that these equipment services are having a positive effect on yields.

The cooperatives too, described greatly increased services to their members after the roads were constructed. Before, a farmer could obtain advice by going to the headquarters but no farm visits were made by the technical personnel. Now they are active in direct farm assistance.

Still another advantage when communications are easy is that of technical assistance provided by the agricultural supply houses. There are several that sell many kinds of chemicals and equipment; their representatives call on farmers and this adds to the quality of the advice since they can see the problem.

F. Transportation

A decade ago, the major form of transport of produce and supplies was pack animals: horses and mules. Ranchers who needed horses for their cattle work also hauled produce for farmers for a fee. A few medium sized operators had strings of mules especially as a business. The charges were very high, and still are. With the opening of the roads, pack animal traffic was reduced. Vehicles haul produce at about half the price per hundredweight as by animal. This reduction has increased farmer profits.

Vehicle transport also allows a much wider range of marketing possibilities. Farmers can accompany their produce to markets in Tegucigalpa or San Pedro Sula or can consign them via the truckers. Many farmers, especially those with uniform and high quality produce, stated that truck transport had increased the price and thus augmented their profits.

Farmers had two complaints about transportation of their produce. One was that at peak harvest times there are insufficient trucks available, causing them to have to wait sometimes several days. The other was that the road between San Juan of Intibuca and Gracias of Lempira is impassable during the rainy season and difficult even when dry. This causes them to have to ship via La Esperanza then north again to San Pedro Sula, greatly increasing their costs. (See the presentation on that road in Chapter VIII, sites for recommended roads.)

G. Conclusions and Recommendations

Most of the conclusions and the recommendations drawn from them are obvious from the text. They merit reiteration for emphasis.

The building of new roads and the rehabilitation of others have brought enormous changes in the agriculture of the Northwest Region. Manzanas in crops has greatly increased. The traditional crops, corn and beans, have increased in yields but they are still primarily for home or local consumption. Potatoes, coffee, and vegetables, on the other hand, have not only improved in both amount grown and yields, but have also been able to enter the national and international markets because of greatly facilitated transportation.

Recommendations

There are still some productive areas without roads; the entire municipality of Dolores is unserved and a road should be built to it from San Miguelito.

Some of the roads that were built have not been properly maintained and have been severely limited to slow traffic. These should be repaired and then kept up.

The road between San Juan, Intibuca, and Gracias, Lempira, is nearly useless for the transportation of farm produce. The trip from San Juan to San Pedro Sula, the principal coffee and cattle market, would be cut in half and this road should be reconstructed.

IHCAFE has built many penetration roads into the new coffee areas around San Juan and these have had almost explosive effects on the amount of coffee planted there.

Recommendations

These roads serve well at the beginning but the traffic soon outstrips their capacity; many of these should be widened and improved.

There are severe limitations on how many and of what type roads IHCAFE can build; consideration should be given to passing this function to the AID-SECOPT project so that the roads would serve better and for a longer time.

Potato production in the western part of the region is a highly successful cash crop that serves much of the nation. Its transportation needs are heavy at harvest season. The needs for technical assistance, too, increase yearly and the present services have been unable to keep up with the work load.

AID's Private Sector office should look into the possibility of making loans to private transportation companies to help them upgrade and increase their vehicles to meet the needs.

The LUPE project, now in the planning stage, should include additional technical assistance to the potato farmers, such as that now furnished by the Japanese Technical Mission to fruit and vegetables.

The Swiss project in La Paz, MARGOAS, has had an admirable program of technical assistance to agriculture and the maintenance of the roads that serve those areas. The combination has fostered more plantings and higher yields, while cutting the cost of transporting the produce.

Recommendations

The new projects of AID-SECOPT and LUPE should use this same combination: technical assistance and road maintenance.

The LUPE project should incorporate the La Paz area when the MARGOAS project ends; a great deal more improvement can be engendered with more time and resources.

In addition, the LUPE project should conduct a marketing and transportation study to determine how the two can be better facilitated; there are currently problems that can be resolved.

Rural Roads I and II projects, and to a lesser degree the roads of IHCAFE, have had a stimulus effect on the agriculture of the Northwestern Region. This effect is not only visible at the micro economic level but also regionally; commerce, transportation, and general services have increased notably. The work should be continued and, if possible, in close cooperation with the efforts of the divisions of Rural Development and Private Sector.

CHAPTER VI: SHRIMP, SALT, AND TRANSPORTATION

During the last five years, there has been a great deal of interest in the development of shrimp cultivation in captivity, particularly in the Pacific shore areas of the country. This interest has been manifested in many government institutions and in the private sector. The production of shrimp by large enterprises, both national and foreign, has brought heavy investment in the necessary installations for this business. Additionally, many independent and agrarian reform groups have entered shrimp cultivation in the rainy period, often combining this production with that of salt in the dry season.

In the past, there were few access roads to the shore areas where shrimp could be grown, severely limiting this zone's development. In the last two USAID/Honduras road projects, several penetration roads were constructed. These have stimulated many more applications for access roads into the areas perceived as apt for shrimp growing. Because of this interest, the coast of the Southern Region was selected for this special study, not only to examine the feasibility of building the roads but also to obtain reliable information on the cost-benefit ratios aimed at determining the profitability of such projects.

A. The Study Zone

The Pacific coastal zone of Honduras is bordered by low mountains of metamorphic rock that extends in some places to the edge of the ocean. Near San Lorenzo, in Valle Department, several hills surround swampy coastal areas; the lowlands are flooded almost every year by the Choluteca, Nacaome, and Goascoran Rivers, extending across this nearly sea level area. This area, with little vegetation, is in marked contrast to the higher lands to the east. The coast has only salt lands, sand, and mangroves.

In general, the region is characterized by poor management of its natural resources, giving rise to a situation of permanent poverty. The watersheds that protect the water sources have been completely logged long ago. Those hills have been put to cattle grazing or subjected to years of slash and burn agriculture.

All of the coastal region can be classified as tropical dry land forest areas with an average annual precipitation of 2,000 millimeters. The soils on the slopes are only a few millimeters thick. The flood plains, however, are adequate for intensive annual crops and can produce heavy yields.

Until quite recently, the Departments of Choluteca and Valle which make up the Southern Region, were dedicated almost exclusively to livestock ranches. Some corn and beans were grown, mostly as subsistence crops.

Due in part to the high degree of deforestation, the region suffers from long and intensive droughts in five year cycles, causing great scarcities of food and hunger. Consequently, the region is, in general, poor with a high percentage of unemployment and a low per capita income.

The central and local governments have promoted several projects to improve the standard of living of the inhabitants, mostly using the resources of the area in order to slow the rapid migration of the people to other cities perceived as having greater opportunities. Several international missions cooperate with the government through development programs, especially those in agriculture and road construction. Among the international projects that seem to offer the most promise for the development of the zone under study, is the growing of shrimp in captivity. This activity has brought about a fever of interest at every level, from small farmers that see in shrimp a hope for leaving the present precarious position, to the large national and transnational businesses that have thousands of hectares in shrimp production. At the same time, it has led to the issue of further road construction projects in the area.

B. Shrimp and Salt Production

The production of shrimp, particularly around the Gulf of Fonseca is favored by four factors:

- (a) The protection that the coasts of El Salvador and Nicaragua give against the strong waves of the Pacific;
- (b) The large and small islands located just off the Honduran beaches, besides serving as natural protection, contain valuable mangroves;
- (c) The river sediments nourish the waters of the Gulf of Fonseca;
- (d) High tides, ranging from 7 to 12 feet, have formed many canals that attract and nourish sea life safely away from the ocean waves.

There is also a negative factor, according to biologists and shrimp experts, and that is the high degree of salinity in the waters of the bays and inlets, accentuated during the dry season when the rivers are nearly dried up. That same factor, however, provides rationale for the production of salt in these same

areas. Thus shrimp and salt production go together in many cases.

The technical details of shrimp and salt production in the area of study are presented respectively in Annex H-1 and H-2. In the case of shrimp production (H-1), the details cover both low technology production and production on large scale, technical farms, including the stages of collection of the pre-larval shrimp, acclimatization and seeding, care and management, harvest and sales, tank investment (involving cost estimates in Lempiras of investment per hectare), costs of operation and maintenance, and average income.

Annex H-2, on salt production covers the methods of producing the product (e.g., combined sun-fire method, the cooked salt process, the solar plate process), data on investments, costs of operation and maintenance (using a 2-hectare collection or work area in each case), production, and product value in the normal work period of 120 days.

Small shrimp farms have limited financial resources and neglect some of the basic production techniques, such as control of water flows into and out of the tanks, and feeding the larvae. They generally harvest when the shrimp are at a size acceptable in the local markets. That means that there are many sizes and they do little or no sorting except for picking out the largest ones.

Small growers harvest between 300 and 500 pounds per hectare. The sizes range from U-50 to U-60 (50-60 per pound) and are destined for the domestic markets. The price per pound is usually L.3 (\$1.50). It is estimated that there are about 120 small growers (1-5 hectares each) in the area, with some 1,000 hectares in tanks. That would make the production of shrimp from the small farms from 3,000 to 5,000 hundredweight, nearly all of this in the rainy season.

The estimate on total investment per hectare is L.2,200 with a useful life of up to ten years. Total operation and maintenance costs per year amount to L.3,000. If the average yield is 4,000 pounds and the shrimp from each harvest bring a good price, say L.4/lb., (it can be L.3) on the farm, the income leave a small profit, some L.800, which may be reinvested in the operation, amortize debt, or used for family living.

In contrast to the small growers, the large shrimp enterprise operate with complete equipment. Their extensive ponds are divided into well managed tanks, which often permit 3 and 4 harvests per year. As a rule, they have the facilities to handle

each stage of production more efficiently from the capture of the larvae until harvest, quality control, packing, cold storage, and export. There are currently some five large plants in the area with a combined total of about 3,000 hectares. New farms are under construction.

C. Commercialization

The sales procedures are very different between the small and the large producers. A part of this is because the former do not produce an exportable shrimp.

1. Shrimp: Small Producers

The shrimp of the small, and many medium, producers, because of the low level of technology, do not meet the export quality standards. In addition, they lack refrigeration (freezers and cold rooms) that are necessary for the maintenance of quality. Their norms for deheading and packing are far from the hygiene requirements of the US Food and Drug Administration. The only market left to them is domestic. All these (aggravated by lack of good roads and transportation facilities) mean that small growers receive low prices.

Since these growers lack the refrigeration and transport facilities, they must get the product to the market in a very short time. The most common outlet, then, is that of the traders. The producer makes an agreement with the trader ahead of time so that the latter's truck is at the farm for the harvest, allowing almost direct transportation to the markets. The buyer transports the shrimp packed in sacks. The farm price varies from L.2 to 5 per pound, depending primarily on size.

2. Shrimp: Large Producers

The large farms with millions in investment, possess all the equipment and support necessary to produce and sell a shrimp of larger size and the quality desired in the foreign market. Their processing and packing methods are strictly controlled. These enterprises often transport their own, or contract, roll on-roll off refrigerated containers that quickly carry the product from the farms to Puerto Cortes where they are loaded directly aboard a ship. The principal sizes of the product is U-35 to U-40 (35 to 40 shrimp per pound) and the price generally runs about US\$6/lb.

D. Estimated Medium and Long Term Potential

Despite the large catches of wild shrimp and the ever growing cultivated shrimp industry in Ecuador, Mexico, and Asia, there seems to be no slack in the market for Honduran shrimp. The forecasts do not see any significant decline in demand or price.

1. Potential

The estimated potential, as calculated from air photographs taken recently, outline the following for the Southern Region (in hectares):

Mangroves	35,254
Salt ponds	32,910
TOTAL	68,164

(Source: Honduran Ecological Association: Shrimp Environment Study. Sept. 1985)

Total production area (in hectares):

Salt ponds	1,600
Commercial farms (concession)	15,000
Small shrimp farms	3,400
TOTAL	20,000

Potential available : 47,264

These calculations show that only 30.7% of the potential is now in use. This leaves 69.3%, 47,264 hectares, yet to be exploited. That figure would require, of course, a great deal of care so that the environment not be damaged, especially the mangrove stands.

2. Medium and Long Term Expectations

The present explosion of the growing of shrimp in captivity by the small, medium, and large growers shows no sign of abating. At least in the medium term, the application of better technology on the small and medium farms could double the yields without much difficulty. Even the larger growers, according to the Natural Renewable Resources experts, can be doubled with a more appropriate formula of the feed. At the same time, new areas can be opened but most of these will require a considerable effort in road construction.

In the long term future, it appears that the investment in large enterprises will rise higher and higher, according to the predictions. The causative factors include: lack of road infrastructure, rougher terrain of the land available, and greater competition for the best sites. All of the present large growers are located in what is termed "sweet land," that with lower levels of salinity. They are also, for the most part, outside the areas that are often flooded. Expansion will require the utilization of less favorable terrain.

It is anticipated that during the next five years, the technology will be sufficiently developed to allow optimum use of the resources. This would measurably increase the yields, and for the most part, reduce the costs. Yields, according to the experts, could increase 4 to 5 times their present levels.

The Taiwanese Mission, with Natural Renewable Resources, has an experimental farm near San Lorenzo, Valle, operated by Honduran and Taiwanese biologists. This farm is the only one that is dedicated to rigorous scientific research on raising shrimp in captivity. They carry out development studies on: the care of shrimp by growth stages (pre-larval, larval, juvenile, and adult), appropriate feed formulas for each stage, water chemistry, oxygenization. Emphasis is on the practical information needed to increase survival and growth. The achievements are notable.

In 1987, the yields were 2,000 pounds per hectare. In 1988, an average of 3,000 pounds is the goal and appears to be in progress. In 3 to 5 years, a yield of 5,000 pounds is expected. The personnel of this experimental farm continually offer courses on production to small growers and give technical assistance to the medium and large growers. Those working closely with these experts are already experiencing higher yields but there is still much to be done.

3. Technical and Credit Assistance

The evaluation team found a fair number of institutions offering technical assistance in agriculture and more recently, for shrimp growers. Credit has only recently been made available, and that primarily to the small growers. The chief institutions are:

National

Renewable Natural Resources, RENARE
 National Agrarian Institute, INA
 Honduran Corporation for Forestry Development, COHDEFOR
 Central Bank of Honduras, BANTRAL
 National Agricultural Development Bank, BANADESA

International

Rural Technologies Program, financed by AID
 CORASUR, financed by the European Economic Community
 and operated by Belgium
 COHAAT, financed by EEC and operated by West Germany
 Taiwan Mission working with RENARE

The details of the assistance given to shrimp and salt producers by the national and international institutions are presented in Annex H-1 and H-2.

4. Problems in Shrimp Production

The problems facing the small producers are many and complex. They include inadequate finance, weak technology, poor commercialization, and poor concepts of the operation. Those visited complained difficulties with high salinity in the tanks in the dry season. This problem is costly to overcome, probably outside their financial capabilities. That problem and some of the others will be difficult to solve since one of the obvious solutions is pumping and aeration which require electricity, not yet available in the coastal regions. They cannot afford a diesel generator nor diesel pumps.

While the small growers did not mention it, an obvious problem is the lack of proper techniques in management; they are, in fact, very rudimentary. They have little knowledge of why their production is low, why the salinity is high, nor why they should use formulated feeds. Indeed, the knowledge deficit is very great with some - those who provide no feed to the shrimp at any stage of development so that the shrimp have to fend for themselves. Others throw in strips of animal hide, birds they kill, manure, and other garbage. Sorghum, not a satisfactory feed, is still the best used.

As described earlier, the present form of commercialization does not yield the highest income. The intermediaries, of course, invest considerable money in their trucks, drivers, and through the credit they grant the producers; they expect to make a profit on these operations. One suggestion to partly remedy this weak sales operation was a marketing center, near the major producing areas, where the shrimp could be hauled by the owners and offered for sale to the highest buyer. That would be, however, an expensive plan and at present the farmers could not finance it.

E. Transportation Services

Some mention has already been made of transportation of shrimp. There are, additionally, some factors that go beyond costs and deserve attention.

1. Infrastructure

The principal roads that lead from the City of Choluteca and San Lorenzo, Valle, to the coastal zones where shrimp are produced, are, with the length in kilometers:

Intersection CA-1, El Triunfo-Namasigue-La Tajeada: 78
 Intersection CA-1, Monjaras, Brisas del Mar, Guapinol: 47.6
 Nacaome-Los Comales-Cubulero-El Conchal: 16.8

In general, these roads are of low specifications, with a travel surface five meters in width. The drainage is inadequate, the maintenance has been insufficient, and in some cases the roadbeds are too low, allowing flooding. Some roads were observed to serve as dams, creating huge lakes during the recent rains. A general problem is that the surface materials, and perhaps the bases, have not been properly compacted.

Vehicular traffic on most of these stretches is scarce; most of them are pickups, trucks, jeeps, and cars. The heavy container trucks of the large shrimpers also use these roads. Passengers are transported in buses and in the other types mentioned; the latter also carry cargo.

2. Passengers

The bus companies reported that in the area of El Triunfo-Namasigue-Tierra Blanca, the roads can be travelled all year round and about 100 passengers per day are hauled. The price is L.1.60, one way. Two round trips are made each day. The trip down to the beach areas averages only 20 passengers and is sometimes interrupted by flooding. Prior to the roads, those living near the gulf had to walk or go by horse to Tierra Blanca, or via the community of Tablones, a trip that required 3 hours. There they boarded the buses; that trip, too, was slow since before the reconstruction, the road was in bad condition

The reconstruction of the main road and the opening of the access to the shore areas have increased agricultural, shrimp, and salt production. Additionally, more commercial goods enter the area, facilitating a better standard of living. The social benefits include more and better education and health care.

The transport companies must carry enough fuel to allow them to enter and return from the communities since none is available in them. Many users are not satisfied with the services, citing poorly timed schedules and complex rules about freight that can be carried. They also complain about the prices.

The traffic on the road from Monjaras to Brisas del Mar and on to Guapinol, was measured as:

Annual entry into Monjaras: 300 vehicles per year, mostly
pickups and 5 jeeps.
Brisas del Mar: 200
Guapinol: 100 vehicles

The primary passenger traffic is via two buses completing six round trips per day. These are 60 passenger buses, more than adequate for the traffic; they reported a 60% rider load average.

The rate per passenger, one way, is L.1.60 from Guapinol to Namasigue, and L.3 to Choluteca. ;The time to Choluteca often is two hours, even though the distance is short, mainly because of the frequent stops to pick up passengers. Before the road reconstruction, the trip took up to 8 hours on foot or on horses. This road does have gasoline stations, a boon to the bus drivers.

The opening of the road permitted substantial economic benefits via increases in agricultural and shrimp production. The lowered cost of transportation gave higher profits. In addition, new shrimp farms were developed and the older fishing enterprises were able to market their catches much more rapidly and at less cost. A new health center, three new schools, and the entry into the area of several assistance agencies were all regarded as very beneficial by the local residents.

The Nacaome-El Conchal road has a traffic of about 100 vehicles, mostly freight carriers. Four wheel transmission vehicles predominate since the passage is difficult part of the year. Buses carry most of the passengers, one round trip per day. The rate on El Conchal-Nacaome is L.2; El Conchal-Monjaras is L.3; El Conchal-Tegucigalpa is only L.5. The local fare is considered high by the residents.

At present, trips are possible all year round. That from El Conchal to Monjaras takes 1.5 hours, to Nacaome 3.5, and to Choluteca is 5 hours. Before the road rehabilitation, the trip was very costly because of the 8 hours needed. A part of that trip was made with oxen and horses.

With the advent of the good road, the population experienced improved agricultural and shrimp production, less cost for transport of these products and of fish. Both education and health benefits were derived. There are now gasoline stations in the towns and the returns from the sales are high.

3. Freight

The freight traffic in the El Triunfo-Namasigue-Tierra Blanca area is year round. Pickups and small and medium trucks carry most of the produce. Shrimp and fish are the most frequently hauled produce. The most common destination of shrimp and fish is Choluteca. Shrimp dominate in the rainy season, fish in the dry period.

The freight rate from the beach area to Choluteca is L.1, considered just by the users. Before the road, the produce was carried on mules and horses, took 5 to 7 hours, and cost up to L.7. The present cost is obviously much more satisfactory.

Near the community of El Tulito, shrimp production has grown by leaps and bounds. Where there were only two small producers before the road, there are now a dozen. That increase, plus the better transportation for fish, has raised the standard of living of the area. Agricultural production has also increased, becoming a major enterprise where before there was little cropping. Some increase has also been noted in livestock raising.

The cost of freight to Choluteca is L.1.50 per hundredweight. The small and medium trucks take about 3 hours. During the harvest of corn, up to 8 trips per day are made by many vehicles. There are several service stations and three garages along this road.

In general terms, the road has been of great benefit to the people who live in this area. The increase in agricultural, shrimp, and cattle production has made an impact on commerce and the growers. Improved fish marketing has raised the net income of this sector. Socially, the building of new schools and health centers was cited as of a major advantage.

On the route from Nacaome to Los Comales, Cubulero, and El Conchal, the freight hauling is active. The cost from the latter to Nacaome is L.1.60 per hundredweight and takes about 2.5 hours. A further advantage is that some produce enters this area from El Salvador, increasing the business of the trucks and buses. The freight from all of the areas includes farm and sea produce.

Previous to the opening of the last part of the road and the improvement of the first portion, a freight trip commonly took 8 hours. Some four wheeled vehicles could enter in the dry season but when the rains came, only oxen and horses could travel. The beneficiaries in this area, in addition to citing farm, fish, and shrimp increases, also noted the greater amount of employment, especially that from the shrimp farms.

4. Financial Returns from the Roads

A common way to measure the financial returns from a road is to determine the excess of production above consumption. There are also many indirect economic benefits; these are more difficult to ascertain and quantify.

In each of the roads analyzed along the coast, the tentative estimates of increase are:

El Triunfo-Namasigue-Tierra Blanca-Tajeada Road

The passenger and freight situation along this road before the present infrastructure was as follows:

Passengers: The trip took 3 hours by animal to arrive at the bus stop. The cost varied with the activity (whether they carried produce) but ran to about L.0.75 per hour, averaging L.2.25. Presently the rate is L.1.60 to Choluteca giving a savings of L.0.75.

The situation on freight was similar. The cost was previously L.2 and now is L.1. A margin of L.1 per hundredweight results. The most common measures for excess production are: lowered costs of inputs and the release of resources for investment in the productive activity.

El Triunfo-Monjeras-Brisas del Mar-Guapinol

Before the opening of the road, the following was the situation:

Passengers: Eight hours in the trip with an opportunity cost of L.6/working day. The service now costs L.1.60, leaving a consumer excess of L.4.40.

Cargo: Before, freight was hauled by horses and mules at a cost of L.2/hwt. plus L.1 for the vehicle part of the trip. The present cost is L.1.50, leaving a consumer excess of L.1.50 per hundredweight.

Los Comales-Cubulero-El Conchal Road

The situation before the road was:

Passengers: The previous trip by horse took 5 hours, with an average opportunity cost of L.3.75. The present L.2 leaves an excess of L.1.75.

Freight: The prior trip took 5 hours and the cost was L.2/hwt. The present rate is L.1.60, leaving a consumer excess of L.040.

F. The Shrimp Potential and the Needed Roads

The estimated shrimp potential was calculated at 47,264 hectares. A part of that extension is on small islands, which for the most part, cannot be connected by road. Some canals, and certainly the roads, must be constructed to these areas.

Logically, the small producers will continue to occupy mostly the lesser desirable sites and the large growers, because they can invest in the infrastructure, will obtain the best land.

1. The PotentialSan Bernardo Zone

Roads	Distance Kms.	Potential Area Hectares
(1) Montecristo - San Bernardo	1	200
(2) Azacualpa (COPROMISUR) Village of San Bernardo	2	150
(3) Tierra Hueca San Bernardo	9	75
(4) La Costita (El Faro) San Bernardo	4	100
(5) Los Prados del Sur-El Playón	10	500
(6) Gracias a Dios (Los Prados)-Playon	7	350
(7) Hacienda La Florida- San José	13	250
(8) San Bernardo - El Carmen	20	300
(9) Tierra Hueca - Ojo de Agua	13	150
(10) El Tulito - El Playón	15	200
	—	—
Total	94	4,075

Monjarras Zone

<u>Roads</u>	<u>Distance</u> <u>Kms.</u>	<u>Potential Area</u> <u>Hectares</u>
(1) Piedra de Agua - Las Pozas - Las Conchas	18	150
(2) Arena Centro - Col. 10 de Mayo - el Playón	6	125
(3) Marineros del Sur - El Guapinol (COPROMAGUAPI)	3	100
(4) El Camarón Grupo - El Guapinol	2	400
(5) El Ojochal - El Playón	2	350
(6) Las Tijeras - Col. Carbajal Torres - El Playón	4	150
(7) La Guipo - Monjarás - El Playón	3	400
(8) Los Micos - El Playón	6	240
(9) Las Tijeras - El Zapote	4	75
	—	—
Total	48	1990

Nacaome Zone

(1) Col. Siempre Unidos - El Playón	4	50
(2) El Junquillo - Marcafierro	16	350
(3) Tela de Gómez - El Playón	6	800
(4) El Naranjo - Aure Abajo	15	700
(5) Vecinos del Tambor - El Playón	25	300
(6) El Cubulero - Las Playitas	9	1000
(7) Los Luises - El Playón	9	600
(8) La Baraja - El Playón	4	260
	—	—
Total	88	4060

The total of these 27 roads sums to a length of 230 kilometers with a total served area of 10,125 hectares, equivalent to 21.4% of that available.

2. Investments Required

The investment per kilometer of road, with the same specifications as the present ones, was said to be L.30,000 to L.40,000 per kilometer with the necessary drainage.

With the future rises in costs, an average of L.50,000/km. was used. The previously described roads would then require the sum of L.11,500,000, and these are assumed to be possible within 3 years.

The small shrimp growers, utilizing the full 10,125 hectares would produce L.2,500 per hectare, giving a total of L.25,312,000 within the three years.

3. Expected Benefits

At the present time, each hectare produces a net profit of L.300 per harvest under their low technology conditions. With technical assistance and training, the yield could rise somewhat, easily coming to L.500, according to the shrimp experts at the experiment station.

4. Cost-Benefits

There would also be other benefits from the suggested roads. That complementary benefit could easily reach 50%, according to the surveys conducted.

Additionally, there would be many social benefits. No attempt was made to determine their value but that should be obvious of course.

5. Indices of Benefits over Costs

The calculations on cost-benefits were made, using the standard formulae. Their results were:

San Bernardo

Internal rate of return	23.6%
Cost-benefit at 15% return	1.47
Net Value (L. 000) at 15%	4,940

Monjaràs

Internal Rate of Return	47.4%
Cost-Benefit at 15%	3.45
Net real value (L. 000) at 15%	7,765

Nacaome

Internal rate of return	15.6%
Cost-benefit	1.03
Net real value (L. 000), 15%	159

The indices for each zone analyzed indicate that the projects are profitable in that they are greater than the opportunity costs. Further details of the calculations are exhibited in Annex H-3.

G. Conclusions and Recommendations

The southern coastal zone shows great contrasts. These include the huge investments of the larger companies growing shrimp with the small amounts put in by the small growers. Without the shrimp, the small growers would be trying to exist by extracting salt. There is little land available for additional agriculture.

It is obvious from the figures presented in this study that the small, as well as the large, growers can benefit substantially from the investment in roads. The cost-benefit ratios are positive.

Recommendations

The Mission should invest in access roads in the studied areas.

These roads should favor the shrimp growing areas but those for agriculture should not be neglected as they, too, offer sufficient economic impact to justify the roads.

AID-SECOPT should conduct a design and specification study for the roads into the low lying areas; the present construction is inadequate for the heavy container truck traffic and the frequent flooding.

At the same time, the agriculture and private sector divisions should design and execute complementary projects that will help the area reach its potential. Similarly, USAID/Honduras should do all it can to strengthen the participation of Natural Resources, Renewable Natural Resources, COHDEFOR, and the foreign assistance organizations to intensify the transfer of technology and obtain supervised credit for the beneficiaries.

CHAPTER VII: SOCIAL AND OTHER IMPACTS

The task of evaluating the social and other impacts of the rural roads projects essentially involved the generic approach of measuring to the extent possible the degree to which broader project purposes and goals are being achieved. The standard referents for evaluation in this regard include long term goals, such as improvements in the quality of life, family welfare and wellbeing, education, health, nutrition, and access to other social services. Effects on mobility, the rural poor, population changes and family planning, women and development, environment, and impact on government policies were also probed in this evaluation.

Accumulated experiences on the subject show that road projects can generate a wide range of social impacts such as those indicated. It is also not uncommon for a social impact to become manifest in areas that often resist categorization. This is particularly the case of the many visible signs of changes in a community which independently might not seem significant but cumulatively would indicate a major impact.

Social changes and impacts are of course difficult to measure since they are generally qualitative in nature. They are also slow to emerge and are revealed only gradually over time. At certain stages, they may only be reflecting trends. Undeniably, some impacts are more difficult to collect information on than others. Some impacts, such as improved health or living standards, are often the ones of most interest and significance. In such cases, an examination of what actually has occurred, rather than what differences have been made, can provide the information necessary to infer social impacts of the projects. The same is true when no baseline data exist for comparison of social changes before and after the construction of a road project. In both cases, retrospective interviews with beneficiaries and local experts have often been found useful.

A. The Socio-Cultural Study Approach

Within this framework, the purpose of this chapter is to present the results of the field survey conducted in conjunction with the other components of the study to determine the social and other impacts of the rural roads projects. The evaluation focused mainly on two levels of impact information: (1) at the beneficiary level and (2) at the community or local context level. The first was aimed at resident individuals and their families as a primary target group to determine what changes at the personal or household (micro) level had been brought about or stimulated by the projects. The second was meant to assess

changes in the environment and local community as a whole (macro level) and was addressed mainly to village community leaders, mayors, municipal representatives, agrarian reform groups, social workers, extension service agents and local functionaries of the other government services, school directors and teachers, business owners, leaders, representatives of private voluntary organizations and other aid agencies and other local experts. The underlying assumption in this two-pronged, complementary approach should provide reasonable if not absolute basis for determining the social and other related impacts of the road projects.

For ease of reference, the main areas of investigation and corresponding indicators pursued at each level of impact are indicated below:

Beneficiary Level

Areas of Investigation

Key Indicators

(1) Family Wellbeing	Education; health; housing; food.
(2) Attitudes	Self help; communications and interaction.
(3) Solidarity	Cooperation; collective activities, economic support.
(4) Participation	In a group; in projects; and community activities.
(5) Access to services	Agricultural extension; education; health; nutrition; family planning.
(6) Miscellaneous	Other visible signs and indicators on the quality of life (e.g., mobility, travel, women's role).

Community Level

Areas of Investigation

Key Indicators

(1) Communication	Contact with central towns; other travel.
(2) Village Leadership/organization	Establishment of organizations, associations, cooperatives.

- | | |
|---|---|
| (3) Community development | Participation in community projects, programs and activities; volunteer activities. |
| (4) Migration | Population changes and mobility. |
| (5) Other areas, e.g.,
education and health facilities, nutrition and family planning services, environment. | Existence and availability of the services; visible effects on environment such as deforestation, soil erosion, floods. |

Accordingly, two sets of questionnaires were developed: one for the beneficiaries and the other for those at the community level. As much as possible, similar or parallel questions were designed to augment data and check-offs on congruence of responses. Sample copies of these survey instruments are available in Annex C. Both instruments were administered via one to one interviews with respondents during the three week field work conducted for the study. Site observations complemented the structured interviews.

As stated in an earlier context, the survey was carried out in communities within selected regions and municipalities of the sample areas of the rural roads projects. Visits were made to representative communities in the Departments of Copan, Ocotepeque, Lempira in the Western Region, Intibuca and La Paz in the Northwest, and Choluteca and Valle in the Southern Region. For maximum impact study, the survey roads site observations concentrated on the communities in the Rural Trails and Access Roads, but some in older projects were also included.

B. The Socio-Cultural Context

An overview of contemporary social life and residential patterns typical of the regions provided a useful background to this part of the study. Although many changes are being effected, the overall traditional patterns are still discernible.

1. Western and Northwestern Regions

Available data show that the Western and Northwestern Regions of Honduras are the most mountainous part of the country with only some 1.3% of the valley land of Honduras. It is a thickly populated area, with a density of about 1,218 persons per square kilometer, compared to the national average of 105. Farms in the area are smaller in average size but significantly less

subsistence oriented than the rest of the nation, ostensibly due to the importance of coffee. The settlement pattern consists of major market and administrative centers (located in fertile valleys), smaller market towns, and villages. Most villages are accessible by road but some only by foot trail.

The regions have an agrarian economy with the flow of agricultural produce following communications routes from villages and farms to market towns and major consumer centers. The traditional social pattern of this flow has been from peasant producers to small traders and landed elite. Where all weather gravel roads have been constructed, much of the flow is now handled by truckers and traders.

The class structure of the regions generally consists of peasant agriculturalists, a group of small business people, artisans and small traders, and a thin layer of larger land holders -- all linked in a variety of social relationships that are part of the agrarian economy. The smaller market towns are primarily inhabited by peasants, with a 5 to 20% complement of small business and large farmers and ranchers. Subsistence, semi-subsistence, small scale market oriented farmers live mostly in villages scattered throughout the regions.

The typical village social structure in the mountain areas of Honduras is based primarily on the family, which is also the principal economic unit for both production and consumption. There is generally no all-encompassing politico-religious community structure. However, there are usually two types of community organizations with both political and administrative functions. The local government is the municipal structure, represented in most villages by a municipal representative who is responsible to the mayor (alcalde) in the municipal seat. A second organizational structure is the councils (patronato) which are associations of villagers charged with carrying out certain community improvement projects (e.g., school facilities and repair, introduction of potable water service), and other small community development projects.

Patronatos can be found in almost every village in Honduras. If data collected from Ocotepeque are representative of the picture, more than half of the adult villagers belong to a patronato and probably, a vast majority of residents belong to patronatos sometime during their lives. In some cases, the patronato is formed in response to some stimulus external to the village. The village school teacher is often the organizing force around which the patronato is established, mainly because the most frequent council function is related to school construction and maintenance. However, social workers and extension agents from various government ministries also use these councils to carry

out projects. As a rule, a patronato has a president, who is also often the municipal representative, especially in small villages.

2. The Southern Region

Much of what has just been described of the social scenario and residential patterns in the Western and Northwestern Regions also prevails in the Southern Region, where communities were also surveyed. In fact, there is a strong commonality of village social setting and characteristics in all the regions visited, although equally strong differences exist among them in terms of climate, geography, terrain, housing, farm produce, and the extent of development. Particularly in those far flung villages where life is manifestly hard and is a constant battle against unpredictable weather and nature's immoderate ways, the differences, if any, are largely a matter of degree, not in kind.

In the Southern Region, the farming communities were organized almost identically as those in the other regions: villages to small market towns to larger consumer centers. Small business people and traders provide the same important functions: credit, marketing, and retail sales. The municipal governments are pretty much the same every where and the various village councils work on local improvements.

Most of these are also true for the coastal villages. There are some important differences. Housing is often simple, and sometimes rudimentary, because of the more favorable climate. Clothing requirements are fewer. Food consumption patterns vary considerably from those of the farming areas, primarily due to the availability of fish and shellfish. Labor is divided among several activities: some minor farming, fishing, sales of these products, and the construction and repair of nets and boats. Recently, work in shrimp cultivation has also become important in many communities.

C. Survey Samples

The social impact survey covered a total of 489 respondents at the beneficiary level. The distribution by departments and other identification data are shown in Table VII.1. Of the total, 330 or 67% were males and 159 or 33% were females. Heads of families numbered 426 (87%). Average family size was 6.2. The number of interviewees who had been residents before road construction was 406 (83%); "After the road" residents interviewed numbered 83 (17%). The average length of residence was 31 years. The overwhelming majority consisted of small farmers and housewives who, overall, compose the rural poor.

Table VII.1: Identification Data on Beneficiaries Interviewed

N = 489

DESCRIPTORS	D E P A R T H E N T S														T O T A L	
	COPAN		OCOTE- PEQUE		LEMPIRA		INTI- BUCA		LA PAZ		CHOLU- TECA		VALLE		No.	% of N=489
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
No. of Beneficiaries	40	8	39	8	40	8	121	25	52	11	138	28	59	12	489	100
a. Males	20	6	20	6	26	8	84	26	38	12	96	29	46	14	330	67
b. Females	21	13	19	12	14	9	37	23	14	9	41	26	13	8	159	33
No. of Family Heads	34	8	32	8	34	8	105	25	38	10	129	30	54	13	426	87
Ave. Family Size	5.5		6.2		5.6		6.2		5.5		6.7		6.6		H	6.2
No. Residents Before															406	83
No. Residents After Road															82	17
Ave. Length of Yrs. Residence	27		37		32		31		29		30		36		H	31

H = Mean

At the community level, the number interviewed came to a total of 192. Table VII.2 shows the distribution by department and by occupation. Choluteca and Intibuca accounted for the highest numbers, 58 (30.4%) and 51 (26.2%) respectively. Relatively speaking, those two departments had the most exposure to road building in the early 1980s under Rural Roads Project I. The spread of the interviewees by occupation covered some 23 positions and lines of work. Teachers and school directors composed the highest number, followed in descending order by officers of clubs/organizations, cooperatives, patronato officers, municipal officers, nurses, social and health promoters and family planning personnel. The list included an alcalde, 3 medical doctors, a dentist, a religious leader, and some representatives of the Peace Corps and external private voluntary organizations.

What was striking about the interviews at both levels of the impact study was the enthusiasm and willingness of the respondents to give part of their busy time to participate in the survey. Their readiness to answer questions and volunteer information was most commendable. Most unforgettable was an occasion when one of the members of the survey team had to climb a ladder to the edge of a house roof to interview men working there.

D. The Socio-Cultural Impacts

Significantly, site observations and careful analysis of the data gathered provided no reason for separate discussion of the findings by region or locale. The differences in physical, environmental, and other local characteristics did not cause reply differences. Responses and impact findings generally followed a similar pattern with only minor deviations in degree rather than in kind. Hence, the presentation of the findings is mainly by category and area of social impact.

1. Education

The existence and current status of a school, as well as other types of educational programs in a community, usually provide clues to the educational impact that may have been brought about by a road project. Fortunately for the survey, all sampled communities had at least a primary school for boys and girls. Two of them had two schools. The beneficiaries and community leaders interviewed at each site were asked specifically if they and their families had derived educational benefits, directly or indirectly from the road project through a number of possible indicators. In both cases, long time residents were especially requested to recall and compare conditions before and after completion of the roads.

Table VII.2: Identification Data on Interviewees
at the Community Level

CHARACTERISTICS BY OCCUPATION/POSITION	NUMBER OF INTERVIEWEES BY DEPARTMENT							TOTAL
	COPAN	OCOTE- PEQUE	LEMPIRA	INTI- BUCA	LA PAZ	CHOLU- TECA	VALLE	
1 Alcalde (Mun. Mayor)		1						1
2 Mun. Representatives			1					1
3 Municipal Officers Registrars			1	5		1		7
4 Administrators (Mun./Reg.)				2		3	2	7
5 Police/Security Officers				1		1		2
6 Patronato: Officers				3	1	1	3	8
7 Patronato: Members				1			1	2
8 Medical Doctors						1	2	3
9 Dentist	1							1
10 Nurses	1		1			2	3	7
11 Nurse Aides/Aux.	1			2	1			4
12 Health Promoters	2			2		1	1	6
13 Family Planning Pers.		1	1			2	2	6
14 Social Promoters						1		1
15 Agrl Extension Agents	1							1
16 School Directors		3	1	6	2	2	4	18
17 Teachers	4	5	5	18	5	17	7	61
18 Business Owners	4	4	3	1	1	3		16
19 Officers: Clubs, Groups		3		2	1	16		22
20 Officers: Coops.				3	1	7	1	12
21 Religious Leaders		1						1
22 Peace Corps				2				2
23 Reps. External PVOs				3				3
TOTAL	14	18	13	51	12	58	26	192
%	7.3	9.4	6.8	26.2	6.3	30.4	13.6	100.0

Table VII.3 shows the results of the responses to the specific items of inquiry designed to determine the impact of the road projects on the field of education. As can be seen, practically all the interviewed beneficiaries responded favorably in their perception of the benefits they derived. Almost all of them said they benefitted either directly or indirectly through the establishment of schools (99.6%), better school building construction, and more facilities (97.3%). More teachers work in schools (94.9%) and more educational supervisors (88.1%) visit the schools. Ninety-seven percent of those interviewed also said their children now stay more years in the primary school because it was possible, in most cases, to expand coverage to the full complement of first to sixth grade. It was also found that enrollment in the schools had increased in many cases. A mountain village school teacher was found teaching a multi-grade group of pupils (Grades 1 to 6) because of increase in enrollment attributed to the access road. Any of the schools visited were constructed after the roads were built. Those that existed before the roads had since been improved.

Quite a number of the beneficiaries added that their older children are also now able to attend superior education in nearby towns. Although they comprised only 49 or 10% of the sample. Almost none sent their children to secondary school before the road existed.

Those interviewed at the community level were likewise near unanimity in the view that the road projects have enhanced the opportunities for education. Some 64.6% also observed that more people are attending adult education and literacy programs where these activities are being conducted. Additionally, in a majority of cases, other independent types of educational programs have been facilitated by the roads project. Examples of these other types included activities of the Secretariats of Health, Natural Resources, INA, INFOP, COHDEFOR, Peace Corps, Visión Mundial, Save the Children, ASHONPLAFA, CEDEN, and other voluntary agencies.

A Honduras Family Development Education Center (under INFOP auspices) was found conducting courses in sewing and canning for young women, and agriculture for young men in Azacualpa, Intibuca, and immediate environs. It was at this site that the interview team had to pursue, actually, via foot trails and mud, an agrarian reform group working in the fields. The center, according to the instructors, has been in operation for the last three years. Still, at the time of the visit, some 12 young women were enrolled in sewing and canning and 27 young men were interns studying agricultural technology. In the words of the instructors, the establishment of the center would not have been possible without the rural road built for the community.

Table VII.3: Educational Impact Indicators

A. Beneficiaries Q: Derived directly/indirectly educational benefits from road project? (N = 489)	YES		NO		No Reply/ Don't Know/	
	Number	%	Number	%	Number	%
a. Establishment of schools?	487	99.6	2	0.4		
b. More teachers in school(s)?	464	94.9	25	5.1		
c. Better school building/construction?	476	97.3	13	2.7		
d. More visits by Educ. Supervisors?	431	88.1	58	11.9		
e. More years of stay in primary school?	474	96.9	15	3.1		
f. Children able to attend superior educ.?	49	10.0	440	90.0		
B. Community Q: Road improved opportunities in education? (N = 192)						
a. New schools built?	183	95.3	9	4.7		
b. More teachers in schools?	174	90.6	17	8.9	1	0.5
c. More children in primary school?	190	99.0	1	0.5	1	0.5
d. More attendance in superior schools?	181	94.3	10	5.2	1	0.5
e. More attendance adult education?	124	64.6	68	35.4		
f. More visits of schools by supervisors?	180	93.8	5	2.6	7	3.6
g. Other educational programs?	159	82.8	30	15.6	3	1.6
h. If so, what types?:	Public information activities conferences/training activities adult education and informal courses by such agencies as Plan en Honduras; CEDEN, Vision Mundial, RRNN; Save the children, IHCAFE; CARE; CDI-PTR and others. RRNN had highest frequency followed by INFOP, Adult Education, Public Health.					

Specifically for them, the existence of the road was a major reason for accepting their jobs as instructors because it enabled them to commute daily from home to work.

The near unanimity that the beneficiaries had derived educational benefits directly or indirectly, and that the roads projects have enhanced educational opportunities, should not becloud the fact that there was actually an uneven distribution of the impact among the study sites. The significance of the findings is in the overall perception that the roads project was an important contributor to the general improvement of education in the areas.

2. Health

It is noteworthy that the sampled communities for the evaluation study were in the regions of the country where health conditions are relatively worse than in others. According to a 1987 National Nutrition Survey, moderate to severe malnutrition affects 44% of children under the age of five in the country. The worse affected area is the mountainous west, particularly the Departments of Lempira, Intibuca, Copan, Ocotepeque, La Paz, and Santa Barbara. In these places, approximately 60% of the children under the age of five show growth stunting as measured by height for age, and 54% show chronic wasting as measured by weight for age. The southern part of the country is the next worse with respect to wasting. In these places, too, infant mortality rates are high due mainly to acute respiratory infections and diarrheal diseases. These principal pathologies are exacerbated by the lack of basic health services, and water and sanitation facilities.

Against this background, the field survey team had the most difficult time in making interview appointments with staff of health centers where these existed because the centers were always full of people seeking help. The team nevertheless succeeded in obtaining the views of nurses, some medical doctors and some guardianas de salud (health auxiliaries) in the more remote communities.

The questions asked both at the beneficiary and community levels sought to find out through a series of possible indicators whether the road projects have contributed to the improvement of individual and family health, as well as of health conditions in the community as a whole. An open-ended question allowed for any negative or unintended effects. Table VII.4 shows the results of the responses.

As in the area of education, an overwhelming majority, said the road projects have definitely helped to improve individual and

family health, as well as health conditions in the community. One informant used the term "indiscutable" without question to banish any doubt. High consensus was found on now having more access to health installations such as clinics and hospitals in nearby centers (92.4%). This was followed in descending order by more visits by health personnel (90.0%), more access to information on family planning (86.0%), and more access to medical and nutrition programs (77.5%). Only 47.9% noted the establishment of health centers. Just 59.3% saw derived benefits from better access to potable water.

At the community level, more visits by health personnel received the highest frequency (95.8%), followed by more visits by promoters of extension, and more access to health installations (both 94.3%), and construction of latrines (93.8%). One hundred sixty-six (or 86.5%) of the 192 people interviewed concurred on more access to nutrition education, while 157 (81.8%) noted more access to family planning and 160 (83.3%) for the supply of potable water. One hundred and twenty (62.5%), however, saw benefits from the establishment of health centers.

In a sampled village in Copan, a dentist with a travelling bag of equipment and dental supplies was found in a school servicing pupils and some older individuals. He had come to the school much earlier than the survey team through the rural road sampled for the study. In La Campa (one of the villages visited in Lempira) a male nurse in charge of the community health center, was found conducting a meeting of a health committee, with the help of a president of a village cooperative, a family planning auxiliary, and some council members. An interview with the nurse revealed that he would not have accepted his present position if the rural road to the community had not been built. At the time of the visit, he was already in his second year of service. The road also made it possible for representatives of other villages in the area to attend that meeting. These encounters are cited for they certainly reflect derived benefits from the road projects in the area of health and related services.

3. Mobility

It is generally assumed that rural roads strengthen villages or towns as administrative and economic centers, promoting commuting for permanent or short term work from surrounding areas. The previously cited case of the male nurse in La Campa, Lempira, readily supports this general assumption. A majority of the teachers interviewed were found to be daily commuters from relatively nearby towns. For example, out of the five teachers interviewed in Tierra Blanca, Choluteca, four were from nearby towns. It will also be recalled that the two instructors in the family center in Asacualpa, Intibuca, were also commuters. A

Table VII.4: Health Impact Indicators

Questionnaire

A. Beneficiary (N = 489) Q: Any benefits from the road in relation to health of your family?	YES		NO		No Reply/ Don't Knows	
	Number	%	Number	%	Number	%
a. Establishment of Health Centers/Clinics?	234	47.9	255	52.1		
b. More visits by health personnel?	440	90.0	49	10.0		
c. More access to health installations (e.g., clinics/hospitals)	452	92.4	37	7.6		
d. More access to medical nutrition programs?	379	77.5	110	22.5		
e. More access to info. on family planning?	421	86.1	68	13.9		
f. Better sanitation/health conditions?	391	80.0	98	20.0		
g. Better access to potable water?	290	59.3	199	40.7		
B. Community N = 192						
Q. Has road improved health conditions in the community						
a. Establishment of health Centers/Clinics?	120	62.5	69	35.9	3	1.6
b. More visits by health personnel?	184	95.8	8	4.2		
c. More visits by promoters of extension?	181	94.3	9	4.7	2	1.0
d. More access to health installations (e.g., clinics/hospitals)	181	94.3	11	5.7		
e. More access to nutrition educ. svcs.?	166	86.5	26	13.5		
f. More access to family planning?	157	81.8	34	17.7	1	0.5
g. Construction of latrines?	180	93.8	12	6.3		
h. Supply of potable water?	160	83.3	32	16.7		

great number of the extension promoters and some municipal functionaries encountered were likewise commuters. In all the above cases, the rural roads project indeed promoted mobility.

Mobility is, of course, essentially a two-way phenomenon. It includes not only coming into, but also going out of, a village. In the latter sense, roads are also supposed to provide the means for the rural inhabitants to commute more easily or come and go to enjoy the benefits of nearby villages and towns without migrating. Beneficiaries in the survey were asked if they or members of their families traveled more in and out of the community than before, more communication and contact with people of neighboring towns or villages, and more awareness of public information and other sector issues. They were also asked about family participation in community organizations and associations or groups outside of the community. Parallel questions were formatted for the community leaders. Table VII.5 shows the results of the investigation.

As can be seen, an overwhelming majority at both levels of inquiry responded very positively to the questions. Ninety-six percent of the beneficiaries said they now have more communication and contact with neighboring towns. More travel in and out of the community than before was observed by 83.4%. An equal number (also 83.4%) indicated more awareness of public information and sector issues. Family participation in community organizations varied. Involvement in patronatos had the highest concurrence (91.6%), followed by community groups (87.5%) and the church (73.8%). Only 47% indicated participation in cooperatives (47.0%). A slightly higher number (52.6%) said women participate more in women's groups such as Club de Amas de Casa, parents' associations, Christian groups, patronatos, Plan en Honduras, peasant groups, and Vision Mundial. Club de Amas de Casa was the most popularly mentioned. Only 12 respondents (2.5%) indicated family participation in associations or groups outside of the community, such as AHPROPAPA, public health committees and unions of some sort.

The responses at the community level were near unanimity on all the questions asked. All the interviewees except one (99.5%) said there was more communication and contact between their communities and central towns, and that more people travel more than before. Ninety-five percent concurred on more awareness of public information and other sector issues. An almost equal percentage (93%) indicated that the rural roads project has stimulated community development and self help. Some of the interviewees added that the road projects have generated not only geographic but also social mobility. More frequent travel in and out of the villages has engendered opportunities for better contact with people of influence and improved social status.

TABLE VII.5: Mobility Impact Indicators

Beneficiary Level (N = 489) Questions	YES		NO		Don't Know No Reply	
	Number	%	Number	%	Number	%
Q. More travel in/out of community than before?	408	83.4	81	16.6		
Q. More communication/contact with neighbor-towns?	469	95.9	20	4.1		
Q. More awareness of public info. and sector issues?	408	83.4	81	16.6		
Q. More family participation in community orgns?						
a. Patronatos?	448	91.6	41	8.4		
b. Cooperatives?	230	47.0	259	53.0		
c. Community Groups?	428	87.5	61	12.5		
d. Church?	361	73.8	126	25.8	2	0.4
e. Family women in women's groups?	257	52.6	230	47.0	2	0.4
f. What type?	Club de Amas de Casa; Parents association; christian groups; Pleace Corps; Patronato; Plan en Honduras; Peasant groups; Vision Mundial; Women's association and others (Club de Amas de Casa had the highest frequency of 208)					
Q. a. Some family members participating in associations/groups outside of community?	12	2.5	477	97.5		
b. What type?	Ahpropapa, public health; unions committee					
B. Community Level (N = 192)						
Q. More communication/contact bet. community and central towns?	191	99.5	1	0.5		
Q. More people in community travel more now than before?	191	99.5	1	0.5		
Q. More awareness of public information and other sector/issues?	183	95.3	6	3.1	3	1.6
Q. Stimulated community dev. and self help?	179	93.2	13	6.8		

4. Population Changes and Family Planning

Some indication of population changes in the surveyed communities can be gleaned initially from the identification data on the beneficiaries previously cited in Table VII.1. Out of the 489 people interviewed, 82 or 17% indicated that they had become residents in their respective communities only after the roads had been built. Two follow-on questions bearing on population changes were posed at the community level. One asked whether the project had stimulated people to a) engage in business in the area, b) move and live out of the area, c) move in and out of the area, and d) form other settlements. The other asked if the project had altered models of settlement and land tenure among the inhabitants.

Table VII.6 gives the results. Ninety-one percent of those interviewed indicated that the project has indeed stimulated people to engage in business in the area. Some come and go and others have chosen to reside in the area. Almost an equal percentage said people just move in and out of the area. Sixty-nine percent believed that the road project had also stimulated people to move and live out of the area. On the other hand, 62% noted that people have also moved in to form new settlements. As to whether the project has altered models of settlement and land tenure the views and observations were almost equally divided.

Overall, the opinions and observations of the interviewees on the question of population changes resulting from the roads project are not in total agreement. In the absence of available "before and after" data on the issue, the discordance should be understandable. Site observations and conversations of the team with municipal officials and patronato members, as well as the many visible signs of changes in the communities surveyed, however, indicate that the bulk of the people in the rural areas do not generally move out, strongly wedded as they are to the lands they own and till, either as individuals or as members of a village cooperative. Hence, any population change would come most likely from outside people moving into the area as evidenced by the 82 people in the survey who described themselves as residents of their respective communities after the roads had been built.

Family planning in the communities surveyed was found to be still a weak factor on the issue of population change. The team, as earlier indicated, met with not a few family planning promoters and distributors of contraceptives in the field to have an idea of the outreach on the subject. Both the government's Ministry of Health and ASHONPLAFA, to be sure, are actively pursuing the program. At this stage, however, no hard data are available on the extent to which family planning has actually resulted in population changes in the rural areas, much less on the specific communities visited.

Table VII.6: Population Changes and Family Planning Indicators

Community Level (N = 192) IQ: Has Project stimulated people to	YES		NO		No Reply/ Don't Knows	
	Number	%	Number	%	Number	%
a. Engage in business in the area?	174	90.6	18	9.4		
b. Move and live out of the area?	132	68.8	55	28.6	5	2.6
c. Move in and out of the area?	172	89.6	19	9.9		
d. From other settlements?	119	62.0	65	33.9	8	4.2
IQ: Altered Models of settlement and land tenure	91	47.4	96	50.0	5	2.6

5. Rural Poor

When it is recalled that the great majority of the interviewed beneficiaries are among the rural poor, then most of what has been covered in previous discussion should point to a strong impact on this specific segment of the populace. Later questions to determine further road impact on the rural poor asked beneficiaries if they have better meals for themselves and their families and whether or not the roads have facilitated access to buying better foods and other necessities.

Related questions at the community level asked if the project has stimulated: a) village concern and leadership, b) growth of organizations, associations and cooperatives, c) participation in community programs, d) community meetings, and e) voluntary work. Additionally, a question sought observations on whether the road projects had stimulated increases in: a) the number of street vendors, b) buying and selling activities, c) opening of stores, d) other business, and e) community activities. The assumption is that responses to the above questions would shed further light on the issue. Finally beneficiaries were asked if more directly if the road project had contributed to increases in their family income, better housing and their being able to buy more clothes and food.

Table VII.7 shows the results of the inquiry. Most beneficiaries affirmed better meals for their families and access to better food. Only 75.5% indicated satisfaction with the road project. Practically all community interviewees indicated that the roads project had stimulated village concern and leadership, growth of organizations and associations, participation in community programs and community meetings. A slightly lower percentage observed positive effects on voluntary work. They stated that the project has increased the number of street vendors, buying and selling of commodities, and community activities. Consensus was much lower with reference to opening of stores and other business. Apparently in some of the communities, trade and business have not as yet increased substantially, although there were more reported at every site.

Most noteworthy is that practically all those interviewed concurred on improvements in the quality of life, as indicated by increases in family income, better housing, and being able to buy more food, more clothing and food. In all the communities visited, there were many visible signs of home and family improvement, e.g., wells, latrines, radios, stone construction, good furniture, bicycles, and some had electricity.

Table VII.7: Impact Indicators on Rural Poor

A. Beneficiary Level (N = 489)	YES		NO		Don't Know No Reply	
	Number	%	Number	%	Number	%
Q: With reference to road project						
Q. Satisfied with road project?	369	75.5	102	20.9	18	3.7
Q. Better meals for your family?	471	96.3	18	3.7		
Q. Facilitate access/buying of better food	473	96.7	16	3.3		
B. Community Level (N = 192)						
Q. a. Stimulated village concern/leadership?	185	96.4	4	2.1	3	1.5
b. Growth of Orgns, Assoc/Coops?	183	95.3	6	3.1	3	1.6
c. Participation in Community Programs?	185	96.4	7	3.6		
d. Community meetings?	186	96.9	6	3.1		
e. Voluntary Work?	164	85.4	25	13.0	3	1.6
Q. Has increased						
a. Street vendors?	179	93.2	13	6.8		
b. Buying and selling activities?	186	96.9	6	3.1		
c. Opening of stores?	123	64.1	64	33.3	5	2.6
d. Other businesses (tailor/barber shops)?	104	54.2	86	44.8	2	1.0
e. Community Activities?	185	96.4	5	2.6	2	1.0
Q. Other improvements in life						
a. Increase in family income?	176	91.7	13	6.8		
b. Better housing?	180	93.8	12	6.3		
c. Able to buy more clothes/food?	186	96.9	5	2.6	1	0.5

Many children of the rural poor were seen happily walking to school (although covering long distances), quite fittingly clothed. Some had Coca Cola shirts and occasionally a Miami Vice or "Superman" shirt! Two TVs were seen in one village: one in a store and the other in a house where a truck was also parked in the yard. Fairly nice houses were also seen in some villages.

6. Women and Development

On this category of possible impact, people at the beneficiary level were asked if women in their families are now more actively involved in: a) obtaining an occupation or improving status, b) helping others voluntarily, c) starting a business/trade, d) seeking employment, and e) other benefits for women. At the community level, a similar question asked if the project has stimulated more women participation in the community and if women are now more active in: a) looking for an occupation, b) voluntary services, c) starting a small business (e.g., small store, beauty shop, d) employment in business, and e) other types of employment.

Table VII.8 details the results. About 87% of the beneficiaries indicated that women in their families are now more involved in obtaining occupations, in helping others voluntarily (89%), starting a business or trade (87%) and seeking employment (83%). A lower percentage (62%) concurred in other benefits for women such as work opportunities, more transport facilities, feelings of more security and protection while travelling, occupational and skills training, commercial activities, and easier access to health and emergency services.

The community leaders, 91%, agreed that the project has stimulated more women participation in the community. Also, women were observed to be more active in looking for an occupation (83%), voluntary services (85%), starting a small business (72%), employment in business (59%), and other employment (54%) such as secretarial work, agricultural help, domestic help, potter, weaver, cook, custodian, nurse aide, baker, nursery help, and fruit processing.

Table VII. 8: Women and Development Impact Indicators

Beneficiary Level						
A. Beneficiaries						
Q: Women in your family are more actively involved now in: (N = 489)	YES		NO		Don't Know No Reply	
	Number	%	Number	%	Number	%
a. Obtaining occupation or improving status?	423	86.5	66	13.5		
b. Helping others voluntarily?	433	88.5	56	11.5		
c. Starting a business/trade	425	86.9	64	13.1		
d. Seeking employment?	404	82.6	85	17.4		
e. Other benefits for women?	302	61.8	187	38.2		
f. If yes, what?	Work opportunities; transport facilities travel security, training, commercial activities; easier access to health and emergency services.					
B. Community (N = 192)						
Q. Has project stimulated more women participation in community?	175	91.1	11	5.7	6	3.1
Q. Women more active in						
a. Looking for occupation?	160	83.3	30	15.6	2	1.0
b. Voluntary services?	163	84.9	27	14.1	2	1.0
c. Starting small business (stores, etc)?	139	72.4	51	26.6	2	1.0
d. Employment in business?	114	59.4	73	38.0	5	2.6
e. Other employment?	104	54.2	78	40.6	3	1.6
What types of employment?	Secretarial work agricultural help; domestic help; potter; weaver cook farmhand; custodian, nurse aide, bakery; nursery help; fruit processing.					

Information collected from 18 women interviewed, especially on the kinds of female employment before and after completion of the road project include:

<u>Before</u>	<u>After</u>
* Harvesting coffee	* Harvesting coffee
* Farm labor	* Harvesting melon
* Pottery	* Shrimp raising
* Salt processing	* Fisheries
* Tobacco processing	* Commerce
	* Fruit preservation
	* Sewing
	* Sawing logs
	* Sales lady
	* Pottery
	* Salt Processing

This listing provides some insight into the expansion of work for women in new areas of employment.

Site observations and conversations with other informants indicate that women generally are beginning to acquire more feeling of importance and that the roads are providing them with more opportunities, more choice, and perceptibly more freedom from traditional restraints. Women are benefitting significantly from more access to informal education, nutrition education, family planning, and emergency services.

G. Environment

Literature on road projects warns that rural roads can accelerate deforestation as a result of the expansion of agricultural land and the exploitation of timber for firewood, charcoal, and building lumber. This leads to increased soil erosion, lowering of the water table, higher incidence of flooding or drought, and eventual elimination of wildlife. While uncontrolled exploitation for lumber, firewood, and charcoal may increase incomes for some, the resulting deforestation would have a countervailing impact.

Two questions were asked in the survey to determine the impact of the rural roads project on environment. One sought directly from those at the community level whether the road project (on the basis of their knowledge and observations) has caused some damage to forests and wildlife. The other asked if the road has permitted authorities to more effectively control soil erosion, deforestation, forest fires, illegal cutting of timber and logging and floods, and to supervise water management and preservation of natural resources.

Table VII.9 contains the results. Sixty-five percent of the respondents indicated no damage to forests, while 32% saw otherwise. On damage to wildlife, 65% also answered no, compared to 29% who indicated yes. Twelve interviewees (7%) either didn't know or gave no reply. There was therefore a dichotomy of opinion on the issues: some had occurred in a few communities but not in all of them.

Concurrence of observations and opinions was markedly higher on the second question. An overwhelming majority of the respondents believed that the road has permitted authorities to more effectively control soil erosion (90%), deforestation (88%), forest fires (89%), illegal cutting of timber and logging (88%), floods (78%), water management (84%), and preservation of natural resources (86%).

Site observations and further talks with local experts and functionaries on the environmental issues revealed that some degradations of the environment had indeed occurred indirectly from the road projects. However, these were explained as largely transitory and minimal construction damages which were expected to be far outweighed by the economic and social advantages from the project. The survey team did see ugly spots such as landslides, deforestation on some hills, and flooding in some places. However, these were explained to be due largely to national disasters and to the continued practices of illegal logging by private individuals or groups. The exploitation of the forests by lumber companies with their penchant to penetrate into the interior has especially caused further deforestation in some areas. The most persistent problem was slash and burn agriculture, poorly controlled in some areas.

To what extent the rural roads project may have contributed to these environmental impacts beyond normal construction and development is a matter of opinion. On the other hand, the belief that the roads have permitted authorities to more effectively exercise control and supervision of environmental issues may have a countervailing effect. There is enough evidence to support the salutary effect of the roads project on government control and supervision of the forests in particular. However, scarce technical personnel limits such efforts. According to a COHDEFOR informant, the generally existing ratio of personnel to area of supervision is one to 100,000 hectares of forest land -- indeed too large an area for one supervisor. In the circumstances, the practice of deforestation and its chain effects is bound to continue. In this regard, COHDEFOR is sounding an alarm on damages to environment and ecology caused by the opening and improvement of roads in forest zones. It would be useful for SECOPT to consult with COHDEFOR on the matter if only to determine how road projects can result in environmental impacts.

Table VII.9: Environmental Impact Indicators

B. Community (N = 192)	YES		NO		Don't Know No Reply	
	Number	%	Number	%	Number	%
Q: Has the road project caused some damages to						
a. Forests?	62	32.3	125	65.1	5	2.6
b. Wild Life?	55	28.6	124	64.6	13	6.8
U: Has road permitted authorities to more effectively control and supervise						
a. Soil erosion?	172	89.6	20	10.4		
b. Deforestation?	168	87.5	21	10.9	3	1.6
c. Forest fires?	171	89.1	21	10.9		
d. Illegal Culting of timber/logging	169	88.0	19	9.9	4	2.1
e. Floods	150	78.1	33	17.2	9	4.7
f. Water Management	161	83.9	22	11.5	9	4.7
g. Preservation of Natural Resources	165	85.9	14	7.3	13	6.8

H. Impact on Government Policies and Services

The general impact of the rural roads project on government policies and services is readily manifest in the continuing concern and priority being given by the government to the extension of the project. Under the new nomenclature of Rural Roads Project II, the program now covers the period till mid 1989. It is understood that plans for a Rural Roads III are also being developed.

Two open ended but related questions in the survey asked beneficiaries and community observers to indicate what problems, if any, have originated from the road project and what else would they want to say about the project. These questions were designed purposely to elicit any information that would have useful implications on government policy and services, either retrospectively or prospectively.

The great majority of the respondents both at the beneficiary and community level said that no problems at all have originated from the project. Some of the problems indicated by a few were either too minor, too personal and/or too insignificant to mention. Many praised the government for the project and repeated many of the benefits derived. One significant remark was that in most cases, with probably just a few exceptions, government services generally followed the construction of the roads. This was seen as a very good component of government policy.

Equally significant, however, was the consensus that the roads are badly in need of repair and maintenance. There was near unanimity in this regard and it was feared that if the government continued to ignore the need, the roads would create frustration and despair. Extended discussion on the subject revealed that it will be possible, with proper incentives and motivation, to enlist voluntary community participation in minor road repair and maintenance if the government will provide necessary equipment and tools. The idea is indeed worth pursuing as part of current and future government policy on rural roads construction.

I. Conclusions and Recommendations

It is abundantly clear that the rural road projects have generated a great deal of favorable social and other changes in the communities along the roads built and within the area of influence. Specifically, the roads have enhanced the opportunities for education and have contributed to the improvement of health conditions. They have also helped to

and impact on the rural poor, women and development, environment and government policies, the road projects have had positive impacts. The near unanimity of favorable replies and observations, and the high congruence of views between the beneficiaries and the community leaders on many of the discrete items reflecting the spread of changes occurring in the communities served by the roads. On the other hand, the frequency of NO answers in the survey should reflect for the most part that changes in specific instances are not yet perceptible or in extreme cases, have not yet come about. These differences in degree can be generally expected in the context of social development. It is also logical to expect that while the roads may be benefitting the area as a whole, there is somehow always a group - very often the poorest and most disadvantaged - who will not be reached.

All considered, the bulk of information gathered from the survey strongly supports the general conclusion that the rural road projects have improved the quality of family and community life. Road projects alone could not have been responsible for all of the salutary changes. Government services, which generally followed road building, also deserve credit.

The following recommendations resulted from the survey:

- (1) It would greatly facilitate future evaluation of the social and other impacts of the road projects if, at the time of selecting the roads to be built and the communities to be served, efforts be made in each case to compile or develop a community profile. These would provide baseline data and enable more indepth evaluation and quantitative measurements of pertinent changes after road construction.
- (2) It would also be useful if future project design formats can include more logical framework components in which goals and purposes are stated more clearly, followed by objectively verifiable indicators and means of verification for each. This would promote better focus and concentration on items of evaluation.
- (3) On the question of social impact, it would maximize benefits if there is more coordination and/or integration of road building projects with other AID and government services programs, such as those of the Ministries of Education, Health, Natural Resources, INA, INFOP, COMDEFOR, IHCAFE. Coordination and/or integration with other development projects and services can maximize social benefits.

CHAPTER VIII: POTENTIAL FOR NEW PROJECTS

The study of potential sites for roads was secondary to the research on impacts of roads already constructed. It was added to the evaluation, however, so that when the team was in area where a road was recommended by a reliable source, the area could be surveyed. The results, therefore, are examples, not samples. They merely illustrate some opportunities for further project development.

A. General Observations

It must be noted first that the team did not seek just isolated areas but those about which some information was known: agricultural or other production in the area, a reasonable number of residents and some prospect for improving the economic and social benefits to the inhabitants.

At the same time, as these communities were studied, several adjacent communities began to communicate with the team, explaining why they should be included in the study. Thus although in two cases, only a single community was set for study, others were incorporated from the evidence presented. It is important to state, too, that some of these residents had already made application for a road although at the time, the team was not always aware of that fact. Those applications had caused the residents to seek information about the communities and so the collection of the important information was relatively easy.

The team also notes that there were many other sites similar to those included herein. It may be necessary to conduct a general survey to discover them, then carry out the indepth study of their potential.

B. Sample Projects for Consideration

The survey of potentials for new projects sought to gather the necessary information mainly from two sources: authorities and beneficiaries. As with other components of the entire study, this two-level approach was designed not only to gather more information but also to determine congruence and obtain corroboration of opinions and observations. At the authority level, seven general areas of inquiry, each containing a series of specifics, were pursued. For ease of reference, these are summarized as:

- (1) Information on the possible new roads (location; distance in kms. involved; number of bridges necessary; existing construction difficulties, if any; degree of possible community collaboration)
- (2) Information on the area (population; size of cultivated area, pasture, forest; division of land tenure-large, medium, and small; other sources of income; unemployment rate; existing services-health centers, schools, agricultural facilities)
- (3) Information on agriculture (possible economic improvements that can be developed--new products expansion of existing produce; processing of produce; expansion of cattle raising)
- (4) Other sources of income that may be developed
- (5) Social benefits that can be facilitated
- (6) Current means of transportation (going to health centers, schools, selling produce)
- (7) Other benefits.

Four general areas of inquiry were developed for the beneficiaries. These are summarized as:

- (1) Information on current services (travel distances when buying clothes, food, seeking medical/health services, going to a primary school; nearest superior school and means of transportation; women participation and organizations)
- (2) Information on farms (distances involved in buying farm supplies; means of transport; transport costs; distances involved in selling produce; transport costs; to whom produce is sold; better prices in other places)
- (3) Information on commerce (anybody in the community doing business; distances involved in buying business supplies; distances of markets where goods are sold; and transport costs) and
- (4) Information on possible new roads (location; possible family benefits; disposition to help in construction and maintenance of roads).

Necessarily, a great deal of screening of possible new projects had to be made. The survey had initially a long list of potential new road projects gathered from documentary sources, talks with people and from agencies including IHCAFE (which in

July this year submitted for USAID assistance a list of road projects needed in the area to be visited).

Throughout the listings from the various sources, the study team has assigned its perceived priorities to the suggested roads.

The highest priority roads will be marked ***. Those that appear economically feasible but on which only secondary information, are marked **, suggesting they be restudied with more detail but that the team's information appears strong. In a few cases, very little information was provided and the team did not inspect or study the areas; those are marked *.

Two agricultural extension agents were actively instrumental in gathering the data for two of the potential projects and their services were meritorious. The projects studied for consideration were as follows:

- (1) San Juan, Intibuca, to Gracias, in Lempira
- (2) San Antonio to San Joaquin to Peña Blanca, in Copan
- (3) San Miguelito to Dolores, in Intibuca
- (4) Guapinol across a causeway to a potential shrimp farm, in Choluteca.
- (5) San Lorenzo to Aure Abajo to Chinga, Valle

These five examples clearly indicate the potential for road influence.

The results of the survey study on each of these are herein presented. The format in each case cover parallel indicators.

*** 1. San Juan, Intibuca, to Gracias, Lempira

This road project would involve a distance of about 30 kms. and the construction of one major and two small bridges. The area to be served has a total population of approximately 5,000. Seven thousand manzanas are under cultivation and another 3,000 are pasture or grassland. Forest area accounts for some 1,000 manzanas. Land is almost evenly divided between large and small holdings (roughly 40% each), with medium land holdings accounting for the balance of 20%. Prevailing farm products consist of coffee, potatoes, corn, and beans. Sources of income other than agriculture are transportation and trade. Unemployment rate is at about 25% between the two towns.

Existing facilities in the areas of influence include health centers, primary schools and one secondary school. Some ten youngsters of the relatively well-to-do families now attend a superior school. It usually takes six hours for inhabitants to reach the nearest health center by foot or animal transport, as also for youngsters to reach the nearest high school by the same means. Transport costs to a health center amounts to L. 15.

Especially worth noting from the data gathered at the beneficiary levels are the travel distances indicated in each case. For example, the average distance to buy clothes was 29 kms.; to buy food, 12 kms.; to buy farm supplies or sell products, 29 kms.; for children to go to a primary school, 1 km.; to attend a superior school, 30.3 kms.; and to reach a medical doctor, 43 kms. The average cost of transportation in buying farm supplies was L.8, compared to L.16.45 in selling farm products.

Economic activities which can be developed or improved if the road were built include fruit growing; expansion of current crops such as coffee, potatoes, corn, and beans; coffee processing; better breed and disease control of livestock; and cheese making. Incomes can be increased from cheaper transport costs and from such activities as increased transport, trade, harvesting of coffee, and as previously hinted, dairying for cheese.

All the people interviewed indicated that many social benefits will be derived from the road project. Specifically, the road will facilitate access not only to health and medical services (especially to a good hospital), but also to good high schools for youngsters. It will promote general communication and social contact with other villages and towns, and will, in the area of geographic mobility and incomes. It is also believed that there will be no construction difficulties beyond normal project development and implementation. The community will be disposed to helping both in the construction and maintenance of the road through supply of local materials and manual labor.

*** 2. San Antonio to San Joaquin to Peña Blanca, in Copan

This would involve the construction of 13 kms. of road and two small bridges. Residents in the area to be served number about 1,000. Some 700 to 790 manzanas are currently under cultivation, mainly for coffee, potatoes, cabbages, and onions. Pasture or grassland is estimated at 500 manzanas; forest area at 180 manzanas. Land ownership is divided just about equally between medium and small holdings (40% each), with the balance of 20% belonging to large land holders. The main source of income is

agriculture, supplemented by small trade activities. Unemployment rate is placed at 30%.

There is at present no health center or clinic in the area. The nearest health center is approximately two hours away by foot or animal transport. A primary school does exist. It would also take two hours by foot or animal transport for youngsters to go to the nearest superior education school unless they leave the area and temporarily live in the town where the school is located. Extension services from government agencies are minimal. Movement in and out of the area is either by foot or animal transport. The same means are used for purchasing farm and home supplies (e.g., food clothing) and in selling agriculture produce.

From the beneficiaries responses, the average distance to travel from San Joaquin to buy clothes was 15 kms.; to buy food supplies, 8.5 kms.; to sell products, 18.5 kms.; for children to go to primary school, 8 kms., and to reach a medical center doctor, 24 kms. The average cost of transportation for both buying farm supplies and selling farm products is L. 5.40/hundred pounds.

For those living in Peña Blanca, the corresponding travel distances were as follows: to buy clothes, and /or food 13 kms.; to sell products, also 13 kms.; for children to go to a primary school, 1.0 km; to attend a superior school, 12 kms.; and to reach a medical doctor, 30 kms. The average cost of transportation for both buying farm supplies and selling farm produce was L.7 per 100 pounds.

The economic benefits which can be derived from the road project will include more vegetable and fruit growing, expansion of current production of coffee, potatoes, cabbage, and onions, and a little cheese making. Other sources of income likely to be generated are fruit conservation/preservation and increased commerce. Social benefits which can be expected will be in the form of the establishment of a health center, more attendance at both primary and secondary schools, more individual and family participation in community activities, and the formation of more local committees, including women's groups.

*** 3. San Miguelito to Dolores, Intibuca

Forthwith, it must be stated that Dolores is the only town in the department not linked by any road to any other center. This project would involve the construction of 16 kms. of road and some 3 bridges. The area is sparsely populated at present with

only about 300 residents but is expected to increase considerably in the near future. About 500 manzanas are under cultivation and planted to such crops as coffee, corn, beans, and vegetables. Forest area accounts also for some 500 manzanas. Land is divided into large holdings (50%); medium (30%); and small land holdings (20%). Another source of income other than agriculture and forest products is commerce. The unemployment rate is about 20%. Existing facilities include a health center, a primary school with grade offerings. Some extension services in agriculture come from the RRNN and Vision Mundial. No youngster at the present time is attending a superior school, but approximately 10 a year would attend if transportation is made much easier than now. Movement in and out of the area is mainly by animal transport or on foot. This holds true also in the buying of farm supplies and selling produce.

With regard to travel distances, the beneficiaries indicated an average of 48 kms. to buy clothing and/or food; to sell products, 25 kms.; for children to a primary school, 1.14 kms.; to attend a superior school, 48 kms.; and to reach a medical doctor, also 48 kms. The average cost of transport for farm supplies was L.12.28, compared to L.5.28 in selling farm produce.

Economic benefits which can be expected from the road include increased production and sale of farm produce and lowering of transport costs. Cattle raising is likely to expand, giving rise to cheese making as a source of added income. Social benefits will be in the form of easier access to health facilities, improved health conditions, more access to educational opportunities, and more communication and contacts with other towns and villages. No construction difficulties are envisaged and people in the area will be willing to cooperate in the construction and maintenance of the road through manual labor.

*** 4. Guapinol across Causeway to Potential Shrimp Farm, in Cholulteca

Guapinol is a coastal village and fishing is the main source of livelihood. It has a great potential for shrimp cultivation which if fully developed will be a big boon to village economy. The road project desired will span only a distance of two kms., but is of strategic and commercial importance for it will link some 70 hectares that can be devoted to shrimp raising with the village and thus facilitate marketing of the product. There are approximately 210 inhabitants in the area and unemployment is minimal. It was observed, however, that the absence of the road in question is causing idleness and reducing work for the inhabitants.

There is as yet no health center in the area. A primary school exists and extension services from government agencies are practically nil. Only three youngsters from the village attend a superior school. The data on travel distances distilled from the interviews with the beneficiaries reveal great loss of time and cause difficulties. It would take an average distance of 31 kms. to buy clothes or food; to sell products directly (without middlemen) into the market 74 kms.; for children to go a primary school (practically 0 kms.), but to attend a superior school, 31 kms. (or one hour by bus at the cost of two Lempiras); and to reach a medical doctor, 13 kms. The average transport costs for buying supplies is L. 6.75 that for selling products is L. 19. Apparently these high transport costs include the necessary provisions for transporting fish and fish products. The usual means of transportation is by foot to the road network where a bus might be available.

The economic benefits which can be derived from the road construction include savings in time, energy, and money; expansion of the shrimp industry; and increase of incomes with its spinoff effects on improving the quality of life in the community. Transport service for both passengers and cargo is likely to develop as another source of income for the more enterprising segment of the village population. Social benefits expected will include the establishment of a health center, better access to other health installations, and better opportunities for education in the form of more school attendance both at the primary and superior level. Better housing is also anticipated. The community is disposed to collaborate in the construction and maintenance of the road project through manual labor particularly in filling up potholes and cleaning the road. The group already purchased the right of way and built a causeway. The latter is poorly constructed but can serve as the base for the new road.

** 5. San Lorenzo to Aure Abajo to Chinga in Valle

This project (the last studied by the survey team) involves a distance of seven kms. and will serve approximately 520 inhabitants. Some 400 manzanas are under cultivation in the area of influence. No pasture land or forest exists. Other sources of income are salt and shrimp. These two sources are expected to expand considerably in the future. Fifty percent of land in the area belong to small holders: 40% to medium and 10% to large land holders. Unemployment rate is estimated at 30%.

The area has no health center as yet. A primary school exists; extension services from government agencies are nil. No youngster is attending a superior school. Transport and movement

in and out of the area is either by animal or on foot. The interviewees indicated that for those in Aure Bajo, it would take one hour to travel at the average of 7 kms. to buy food and clothes or to sell products; for children to go to a primary school, 1.0 km.; to attend a superior school, 7 kms.; and to reach a medical doctor also 7 kms. The cost of transport in buying farm or fishing supplies is L. 4; that for selling products is L. 3.33.

For those living in Chinga, the mean distance involved in buying food and/or clothes and in selling products is 21 kms.; for children to go to a primary school, 2.75 kms.; to attend a superior school, 21 kms.; and to reach a medical doctor, also 21 kms. The average transport cost for buying farm supplies and for selling products is L. 7.

Economic benefits to be gained from the project include the raising of melons as a new crop and expansion of the shrimp and salt industries, leading to increased employment and income. The road will facilitate access to health facilities, as well as to superior education in San Lorenzo. Some ten youngsters would attend secondary education when the road exists. Other social benefits include more social participation and general communications with other villages and towns. As in the other projects studied, no construction difficulties are anticipated. The community is willing to organize and assist in the construction and maintenance of the road project through manual labor.

C. Information on Potential Areas from Other Studies

A review of the documents and files made available to the survey team also shows potential areas from other studies. One study stands out. Belen-Gualcho Development Project, an integrated development program in Belen (San Marcos de Ocotepeque) of the Belen Agricultural Producers Cooperative and Project Global Village.

Project Global Village (sponsored by Mercy Corps) is a private Christian organization active in village organizations and rural development. One of its accomplishments is the Yure River Basin Development Project, an integrated program, which began in 1984, continued until 1987 under technical guidance and is now expected to be self sufficient in three years time. Under the Yure project, some 69 kms. of road have been constructed and 63 kms. of road had been further graded with USAID assistance.

1. The Belen-Gualcho Development Project

This project is actually a five year development program (very much like the Yure River Basin Project), which began in 1986 with broad goals to improve the socioeconomic and spiritual well-being of the people, improve community health services, and develop the human resources potential of the village and agricultural leaders in the area. One of the specific goals is to hand labor construct 23 kms. of penetration roads into the mountains to allow access by ten ton trucks for harvesting fruits and transport it to the market. Construction teams began in mid-November of 1987 with Food for Work assistance from the World Food Program. Five kilometers of road have already been built by picks and shovels but there is an obstacle, "lack of budget funds for additional foods."

On March 14, 1988, Global Village submitted to both the SECOPT General Director of Roads and the Office of Engineering, USAID, a request for assistance for access roads in the Belen-Gualcho area. These roads were designated as follows:

- ** . Belen-Gualcho to La Moaga - 8 kms. (South);
- *** . Belen-Gualcho to El Paraiso and Suyande passing by Lentago and ending in Copantillo -- 8 kms. (Northeast); and
- *** . Belen-Gualcho to Belen, Gualaca, San Sebastian - 14 kms. (Southeast)

The rationale for constructing these roads is contained in a document summarized in a large table showing for each community mentioned such details as number of houses, inhabitants, principal crops and annual production figures, as well as the presence or absence of such facilities as schools, health centers, and supply of potable water.

2. IHCAFE Road Program, 1988

Another study of potential areas was submitted in July 1988 to USAID by IHCAFE, requesting funds for the latter's roads program in the coffee zones of the country. Entitled "Improvement and Maintenance of Roads in Coffee Zones," the solicitation presents in tabular form the names of the roads by department for which assistance was being sought. The data for each road project details the name of the road, municipality, length in kms., type of work needed and the cost in Lempiras. The request covers forest zones in the Departments of Santa Barbara, Copán, Comayagua, Yoro, Ocotepeque, Lempira, Cortes, El Paraiso, Intibucá, La Paz, and Olancho.

No priority is assigned to these roads since little information was provided. They should be studied, with IHCAFE, to establish their priority.

3. COHDEFOR List

In a special report, COHDEFOR submitted a list of potential areas in the Western Region for which serious and urgent attention is being sought. It includes 10 road projects as follows:

- *** (1) Gracias to Belen, Lempira, (28 kms.) and from Belen to San Juan, Intibucá (28 kms.).
- * (2) La Iguala - Montaña Verde (12 kms.).
- *** (3) Copán Ruinas - Las Flores - Pinabetal (30 kms.).
- * (4) Cabañas Copán - Aldea Pinalito (4 kms.).
- ** (5) Santa Rita Copán - La Reforma (10 kms.).
- ** (6) Detour Las Lomas - Cabañas Copán to join with road to San Fernando, Ocotepeque (3 kms.).
- *** (7) Detour Tierra Fria - Cabañas Copán (8 kms.) and Tierra Fria - Santa Rita Copán (6 kms.).
- ** (8) Santa Rita de Copán - La Libertad (12 kms.).
- *** (9) San Nicolas Copán - El Porvenir and El Modelo (12 kms.); and
- ** (10) Gracias - Antigua Planta Eléctrica (8 kms.).

An earlier COHDEFOR memo, dated August 26, 1988, to USAID detailed 8 other potential projects. Studies on these potential areas should be available at COHDEFOR.

D. A Special SECOPT - AID List

To this discussion of information on potential areas from other studies should be added the SECOPT-AID list of requested projects, dated August, 1988. This list contains 10 projects mostly in Choluteca and Valle. On September 9, 1988, the municipality of Yocón, Olancho wrote a letter to the Engineering Office of USAID requesting inclusion of a road project in any road building for Honduras. The road project would involve a total of around 65 kms. involving the areas of:

- ** Yocón - Rio Abajo - Cañada Galana - Potrero - Higuierito-Empalizada - Calpules - Quiscamote - Ocotal del Naipe-Cubano - El Nance - Cañada del Novillo - El Coyol.

The Engineering Office of USAID has in addition to these projects, a file on requests for road projects received from time to time and a brief socioeconomic study on some projects in

communities in other departments of the country. Since information on all these is readily available in USAID, no further discussion is necessary.

E. Other Potentials

Finally, other areas can be gleaned from other sources. On August 23, 1988, a memorandum from Fondo de Desarrollo Financiero to the Rural Development Office of USAID submitted copies of specific requirements for rural roads for five cooperatives, namely:

- *** Maya Occidental (La Entrada, Copán)
- ** CREHSUL (Comayagua)
- ** Fruta del Sol (Comayagua)
- * Cooperativa Cafetalera Lago de Yojoa (La Fè), and
- *** Cooperativa Cafetalera Triniteca (Trinidad, Santa Barbara)

The total request is estimated at over 278 kms. of new roads and over 200 of repairs. For these potential projects, the principal reason is "to improve the high productive potential of coffee, rice, melon, corn, and other crops". Details of the requests including the names of roads are on file at the Rural Development Office.

F. Shrimp and Salt

Chapter VI detailed some roads that fell within the study and were perceived as having great potential benefit. The listings included the following:

<u>San Bernardo Zone</u>		Distance	Potential Area
Roads		Kms.	Hectares
** (1)	Montecristo - San Bernardo	1	200
*** (2)	Azacualpa (COPROMISUR) Village of San Bernardo	2	150
** (3)	Tierra Hueca San Bernardo	9	75
** (4)	La Costita (El Faro) San Bernardo	4	100
* (5)	Los Prados del Sur-El Playón	10	500
*** (6)	Gracias a Dios (Los Prados)-Playon	7	350
** (7)	Hacienda La Florida- San José	13	250
*** (8)	San Bernardo - El Carmen	20	300
** (9)	Tierra Hueca - Ojo de Agua	13	150
*** (10)	El Tulito - El Playón	15	200
		—	—
	Total	94	4,075

Monjaras Zone

<u>Roads</u>	<u>Distance Potential Area</u>	
	<u>Kms.</u>	<u>Hectares</u>
** (1) Piedra de Agua - Las Pozas - Las Conchas	18	150
*** (2) Arena Centro - Col. 10 de Mayo - el Playón	6	125
*** (3) Marineros del Sur - El Guapinol (COPROMAGUAPI)	3	100
*** (4) El Camarón Grupo - El Guapinol	2	400
*** (5) El Ojochal - El Playón	2	350
*** (6) Las Tijeras - Col. Carbajal Torres - El Playón	4	150
*** (7) La Guipo - Monjarás - El Playón	3	400
** (8) Los Micos - El Playón	6	240
* (9) Las Tijeras - El Zapote	4	75
	—	—
Total	48	1990

Nacaome Zone

* (1) Col. Siempre Unidos - El Playón	4	50
*** (2) El Junquillo - Marcafierro	16	350
*** (3) Tela de Gómez - El Playón	6	800
*** (4) El Naranjo - Aure Abajo	15	700
*** (5) Vecinos del Tambor - El Playón	25	300
*** (6) El Cubulero - Las Playitas	9	1000
*** (7) Los Luises - El Playón	9	600
** (8) La Baraja - El Playón	4	260
	—	—
Total	88	4060

G. Completion of Fural Trails and Access Roads Project

As was pointed out in Chapter II, the access to a very fertile area, and one that would allow access to still another fast growing coffee and vegetable area, was left without the necessary bridge, causing the residents to cross a deep and swift river, and that only in the dry season.

*** Sensenti to Azacualpa, Ocotepeque

Since the approaches were roughed in, and the bridge would be only about 10 meters in length, the cost would be minor. It is strongly recommended that this subproject be completed. The stretch onward to La Loma was viewed superficially by the team

and a few informal interviews were conducted. The information suggested that there is a great potential for this extension of the Sensenti-Azacualpa road.

CDI-PTR documents also provided a listing of road projects for urgent consideration. A memorandum from the coordinator in the southern zone, dated August 24, 1988, listed road projects needing attention in El Triunfo, Alianza, Guapinol, Choluteca, and San Marcos de Colon.

In closing this chapter, it will be useful, to point out in light of previous discussion that there is practically no limit to the number of potential areas. What is needed is a careful study on a case to case basis to determine priorities and the best use of available funds.

ANNEX A
ACRONYMS AND ABBREVIATIONS

AID	Agency for International Development; Agencia Internacional para el Desarrollo.
AHPROCAFE	Asociación Hondureña de Productores de Café; Honduran Coffee Growers Association
AHPROPAPA	Asociación Hondureña de Productores de Papa; Honduran Association of Potato Growers
ASHONPLAFA	Asociación Hondureña de Planificación Familiar; Honduran Association for Family Planning
BANADESA	Banco Nacional de Desarrollo Agrícola; National Bank for Agricultural Development
BANHCAFE	Banco Hondureño del Café Honduran Bank for Coffee
BCH/BANTRAL	Banco Central de Honduras; Central Bank of Honduras; Central Reserve Bank of Honduras.
ECIE	See CABEI.
BID	See IDB; véase IDB.
BIRF	See IBRD; véase IBRD.
CABEI	Central American Bank for Economic Integration; Banco Centroamericano para la Integración Económica (ECIE).
CARE	Committee on Aid and Relief Everywhere
CEDEN	Centro Evangélico de Emergencia; Evangelical Emergency Center
CESAR	Centro de Salud Rural; Rural Health Center
CDI - PTR	Centro de Desarrollo Industrial - Programa de Tecnología Rural (PTR); Center for Industrial Development - Rural Technologies Program
CODDEFFAGOLF	Comité para la Defensa y Desarrollo de la Flora y Fauna del Golfo de Fonseca; Committee for the Defense and Development of the Flora and Fauna of the Gulf of Fonseca (San Lorenzo, Valle)
COHAAT	Comisión Hondureña-Alemana de Asistencia Técnica; Honduran-German Technical Assistance Commission
CONDEFOR	Corporación Hondureña de Desarrollo Forestal; Honduran Corporation for Forestry Development

CORASUR	Consolidación de la Reforma Agraria en la Región Sur; Agrarian Reform Consolidation in the Southern Region (European Economic Community-Belgium)
DGC	Dirección General de Caminos; General Directorate for Roads
DGM	Dirección General de Mantenimiento; General Directorate for Maintenance
FECOHRA	Federación de Cooperativa Hondureña de la Reforma Agraria; Honduran Federation of Agrarian Reform Cooperatives
GOH	Government of Honduras; Gobierno de Honduras
IBRD	International Bank for Reconstruction and Development; Banco Internacional para Reconstrucción y Fomento (BIRF)
IDB	InterAmerican Development Bank; Banco interamericano para el Desarrollo (BID)
IESS	International Executive Secretarial Service Servicio Secretarial Ejecutivo Internacional
IHCAFE	Instituto Hondureño del Café; Honduran Coffee Institute
INA	Instituto Nacional Agrario; National Agrarian Institute
INFOP	Instituto Nacional de Formación Profesional; National Institute of Professional Training
Kms	Kilómetros; Kilometers
LUPE	Land Use and Productivity; Uso y Productividad de la Tierra
MARGOAS	Proyecto Marcala-Goascorán (Suizo); Marcala-Goascoran Project (Swiss)
MODICA	Modelo de Desarrollo Integrado para Comunidades Agrícolas (Misión Técnica Japonesa); Model for Integrated Development of Agricultural Communities (Japanese Technical Mission)
Mz	Manzanas; 1.73 acres; 0.7 hectáreas.
PIB	Producto Interno Bruto; Gross Domestic Product

PLANDERO	Plan de Desarrollo Región Occidente; Western Region Development Plan
PRODERO	Programa de Desarrollo para la Región de Occidente; Western Region Development Program
PVO	Private Voluntary Organization; Organización Privada Voluntaria
RENARE	Recursos Naturales Renovables; Renewable Natural Resources
ROCAP	Regional Office for Central America and Panamá; Oficina Regional para Centro América y Panamá.
RR I	Rural Trails and Access Roads; Caminos de Penetración y Acceso
RR II	Rural Roads II; Caminos Rurales II
SECOPT	Secretaría de Comunicaciones, Obras Públicas y Transporte; Secretariat for Communications, Public Works, and Transportation
SECPLAN	Secretaría de Planificación; Coordinación y Presupuesto; Secretarial for Planning, Coordination and Budget
SRNN	Secretaría de Recursos Naturales; Secretariat for Natural Resources (also RRNN)