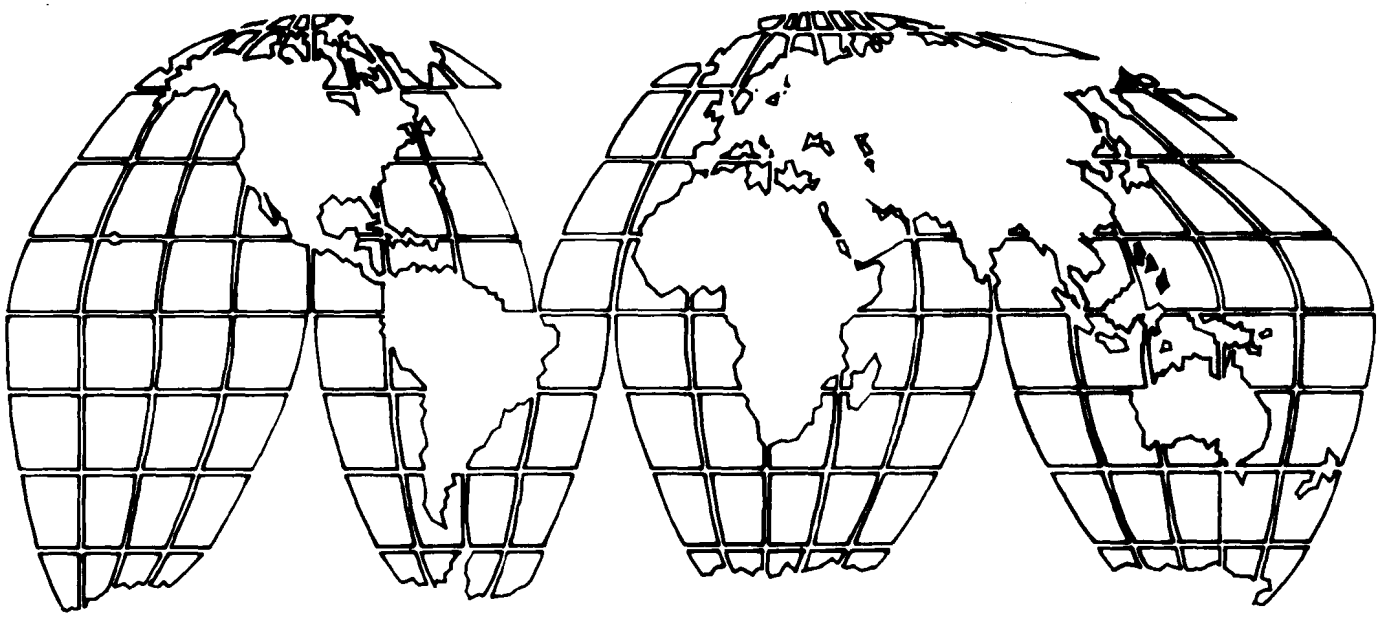
PN-AAH-749

A.I.D. Project Impact Evaluation Report No. 4

Philippine Small Scale Irrigation



May 1980

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PHILIPPINE SMALL SCALE IRRIGATION

PROJECT IMPACT EVALUATION NO. 4

by

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Agency for International Development

May 1980

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FOREWORD

In October 1979, the Administrator of the Agency for International Development requested that, in preparation for an

ACKNOWLEDGEMENTS

The team wishes to thank the staff of the Farm Systems Development Corporation without whose support this effort would not have been possible. Their competence, generosity, and untiring support confirms, far better than this report reflects, their dedication to the small farmers of their country.

The team is also appreciative of the support of USAID/Manila, especially the provision of the services of Mr. Thomas Hobgood.

EXECUTIVE SUMMARY

In 1976, A.I.D. began support of a Philippine Government program to expand village irrigation systems. Since then, over 1000 systems have been built or rehabilitated. Irrigation provided the opportunity to grow two crops each year, increasing rice production and gross farm income. On-farm employment has grown with the demands of double cropping. Local irrigation associations are functioning with support from the national Farm System Development Corporation, the A.I.D.-funded implementing agency. Thus, many of the project's immediate objectives have been met.

The project's sustainability in terms of real income benefits for small farmers, however, may be a problem. Increased gross incomes from double cropping and high-yielding varieties of rice have been substantially offset by increasing costs of production, debt burdens from capital investments, and persistent technological and water management problems. Of crucial importance is the performance of pumps. Floods, electricity fluctuations, and wear and tear have resulted in high maintenance and repair costs; frequent brown-outs interrupt critical water supply schedules.

With more intensive agricultural practices, more family labor is required to produce crops, reducing the opportunities for off-farm employment. Unless the farm is exceptionally profitable, net family income may be lower, as off-farm employment is discontinued. Thus, an anomalous situation results: farm income rises, but family income drops.

National policies are equally important for those moving from subsistence to commercial agriculture. Recognizing that many features of national policy positively affect small farmers, several aspects of Philippine agricultural policy make it difficult for the small farmer to compete. National procurement and price policies are export-oriented, demanding quality standards for rice that most small producers cannot meet. If they cannot, they do not receive the favorable subsidized price and must depend on lower private prices. Since most cost-benefit project assumptions were based on the government-subsidized rice price, farmer income projections have not been met. Small producers remain in a precarious economic condition. To receive the higher price, farmers would have to make additional investments in post-harvest machinery, while energy and other input costs rise. They often cannot afford it. The national credit system has also constrained farmer income, not providing adequate and timely credit. Farmers must often rely on usurious private lenders.

Although progress has been made in land reform, most farmers remain either leaseholders or share tenants without security. These farmers must still pay for and maintain the new irrigation systems. The landlord reaps the benefit from his share in increased production, without sharing in the costs. The share tenant, the most underprivileged, makes the greatest relative investment of capital and labor.

Government policies are clearly focused on increasing total production of rice, assuming increased production will improve the incomes of small producers. Production has increased, but long term, sustained improvement in farmer income will depend on factors beyond irrigation. Increasing the producer rice price, or reducing input costs would immediately improve farmer income. For the present, government policy responds to urban consumer demands, not those of rural producers. This situation is not likely to change. Faced with this rigidity, farmers may pursue three basic strategies to improve their position: reduce their dependency on rice and the rice pricing system and invest in more profitable crops, diversify farm activity by developing livestock or other farm-related enterprises, or seek more lucrative off-farm employment.

The irrigation system leadership works with, and is part of, the established local leadership. Existing authority patterns are reinforced in the short run. The irrigation association seems little used for overt partisan political purposes, and its effectiveness does not extend beyond the irrigation system.

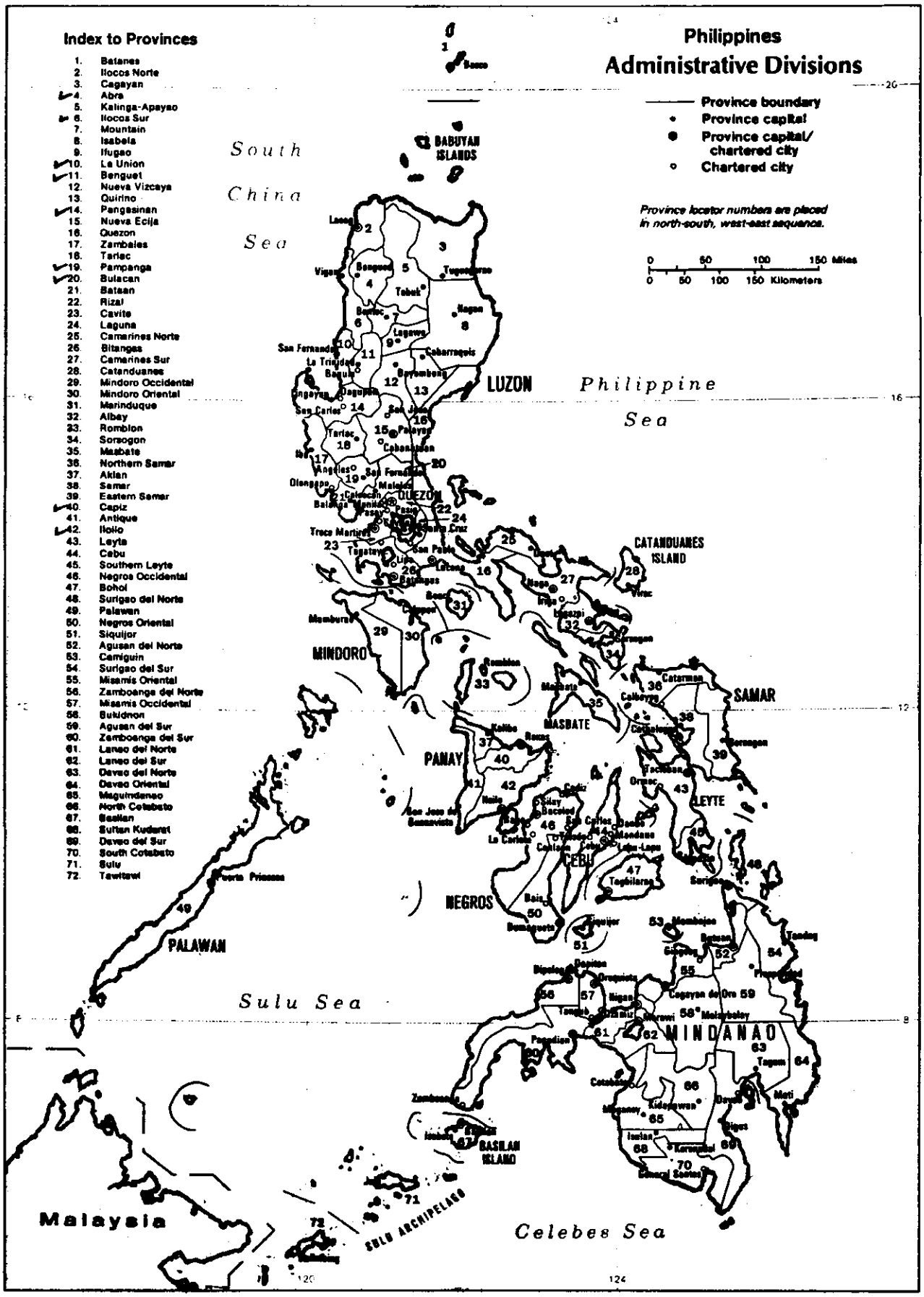
Improved farmer income does not necessarily translate into improved family nutrition. Rather, the farmer's priority is to pay for school fees. Social mobility is seen to be a product of education. Women of farm families have neither benefited from nor been harmed by the project. The Philippine Government has, however, been innovative in using energetic female extension workers. Over half of the Institutional Officers are women and their involvement seems to reflect regional patterns of female participation, which vary considerably throughout the islands. Their role could be emulated in other projects and, perhaps, other countries.

A.I.D. developed this project as a commodity loan, focusing on engineering components and geographic expansion of irrigation, not on maximum gain to the individual farmer. Although gross farmer income has been improved, net income has not, and the system cannot be sustained in its present form. It is recommended that any future support to the competent Farm Systems Development Corporation should concentrate on technical assistance to improve and develop the productive capacity of farms in existing irrigation systems, rather than continuing geographic expansion of what is a fragile undertaking.

GLOSSARY

BAI	Bureau of Animal Industry, Ministry of Agriculture
Barangay	Village, barrio
BPI	Bureau of Plant Industry, Ministry of Agriculture
Cavan	Measure, equal to 40-50 kilograms
FSDC	Farm Systems Development Corporation, the government implementing agency for the project
GOP	Government of the Philippines
Hectare (ha)	2.47 acres
ICP	Institutional Credit Package
IO	Institutional Officer, extension workers of FSDC
IP	Innovational Package
ISA	Irrigators Service Association (means "one" in Tagalog), a cooperative which pays for and operates an irrigation system.
Kaisahan	Division of an ISA, usually receiving water in rotation. The head of a kaisahan is a member of the board of an ISA.
Masagana 99	Previous government program to provide farm credit for seed and fertilizer to raise yields to 99 cavans per hectare.
NEA	National Electrification Administration
NGA	National Grains Authority
NIA	National Irrigation Administration
Palay	Unhusked rice
Samahang Nayon	Pre-cooperative, membership in which is required under agrarian reform
Tagabagbunsod	Village "motivator"-village leader selected for technical training to assist the IO in management of ISA activities
Exchange Rate	$1.00 = P. 7.30

PROVINCES VISITED, December 1979



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PROJECT DATA SHEET

1. Country:

   Philippines

2. Project titles, numbers and dates:

Small Scale Irrigation	492-0274	1976-1978
Small Farmer Systems	492-0301	1978-1981
(Small Farmer Systems II	492-0334	1980-1982)

3. Project funding:

Small Scale Irrigation	
U.S. grant funds	$ 800,000
U.S. loan funds	6,500,000
Government of the Philippines	9,800,000
Farm labor valued at	1,000,000
	$18,100,000
Small Farmer Systems	
U.S. grant funds	$ 1,000,000
U.S. loan funds	10,000,000
Government of the Philippines	10,500,000
Danish Government	1,900,000
	$23,400,000

Scope: The development of small scale irrigation systems averaging 100 hectares with farm sites of approximately 1.5 hectares each. Small Scale Irrigation emphasized developing the physical systems. In Small Farmer Systems, concentration shifted to developing the farmers' capacity to use the system.

I. INTRODUCTION: THE PROJECT

Many Filipino farmers are subsistence cultivators of low-lying lands, near rivers or small streams, where it is relatively inexpensive to irrigate, but where danger of flooding is great. Their crop production is subject to the vagaries of the environment. In some areas farmers suffer from seasonal typhoons that wreak havoc on crop and home; in other areas drought precludes attaining more than a bare living. Many are obligated to landlords and have large debt burdens; they must assume the high costs of agricultural production, but often are paid little for their rice. They also must cope with the increased prices of necessary consumer goods. Their mobility is limited both by income and lack of an adequate education--an education in which they are prepared to invest heavily for their children. These are the farmers that the Philippine Government) assist through the development of small-scale s.

If the Filipino farmer lived a precarious existence, the national economy in the early 1970's was also tenuous. The Philippine Government was importing rice. In spite of a tropical climate and considerable arable land, poor agricultural practices and the lack of a reliable water supply were severely constraining production potential. To reduce imports of rice, the government embarked on a nation-wide effort to increase irrigated land, thus providing a reliable water supply year-round and creating an opportunity to grow two crops each year.

Government concern for increased production and improvement in the farmer's livelihood resulted in the concept of farmer cooperative associations, formally called Irrigators Service Associations (ISAs). The ISAs are legal entities that borrow money and repay loans, cover costs of electricity, arrange for the equitable distribution of water among the membership, organize voluntary labor to build canals, and provide for adequate maintenance of the systems. Small farmers work together because that is the only way the irrigation system will be effective. The government, on its part, provides the capital and a type of extension service, and arranges, where necessary, for electricity to be brought to the area.

There are now over 1000 of these systems, ranging in size from a few to 200 hectares, scattered throughout the Philippines. Each farmer tills about 1.5 hectares of irrigated land; each may also farm some non-irrigated areas. Less than one-third of the

farmers are owners of their fields, most are tenants either with or without the security of leases.

These irrigation systems had their origin in the Barangay Irrigation Service Association, which was reorganized into the Farm Systems Development Corporation (FSDC) in 1975. Located administratively under the Office of the President, it was strengthened in 1978 by a Presidential decree that gave it wide latitude to encourage rural development, including the loaning of funds to village-level organizations for virtually any productive purpose. Although the Corporation is no longer concerned exclusively with irrigation, rice production has been and continues to be a major focus, and the focus of A.I.D. support.

There were two A.I.D. projects: the first called Small-Scale Irrigation was, in effect, continued in a follow-on project, Small Farmer Systems. A.I.D.'s interest in the projects centered on their potential to involve and directly benefit the small farmer. A.I.D. goals in the first project were: (1) to increase farmer income, (2) to at least double employment opportunities, and (3) to decrease the national rice deficit by 50 percent. These goals seemed to complement the Philippine Government's objective of increasing rice production. The goals of the second A.I.D. project shifted further towards improving the quality of life for small farmers by increasing the development of farm systems activities in support of irrigation. This resulted from the advice of an external evaluator, but it had no apparent effect on project design or implementation. The rhetoric changed; the reality did not.

A.I.D. assistance for the two projects totalled $18.3 million and was used for buying commodities and pumps, for rehabilitation and farm support systems. Because A.I.D. had identified the unreliable water supply as the small farmers' main problem, funding and attention were concentrated on engineering.

The Philippine government was concerned with overall production and moved effectively to increase the number of ISAs throughout the country. The government no doubt views the projects as successful. The Philippines is now self-sufficient in rice, albeit marginally. These projects assisted in reaching that goal, although it is impossible to determine the exact degree to which these projects contributed to it. The government, encouraged with progress, has expanded and continues to expand the scope of the Corporation's program.

An important element in the growth of the Corporation's activities has been A.I.D. assistance. It contributed to the geographic expansion of the program, but it has not provided effective support to the agricultural and farm systems

components. Farmers generally feel their lives have improved, but to understand why farmer income fell far short of what it might have been, one must go back, as the team did, to the farm.

II. PROBLEMS OF THE SMALL FARMER

At each ISA visited, individuals and groups of farmers were interviewed. Meetings with over two hundred ISA officials and members frequently took place around the pump site or irrigation ditches, in the fields or at the home of one of the farmers. Villagers were often frank, open, and spontaneous, and many farmers came from their fields to sit and talk with the team. The ISAs are varied; it is almost impossible to describe a typical ISA. There are associations snuggled in the countryside, more than a day's walk from a paved road. Others are close to market towns and within easy access to cities. The types of crops grown vary, as do the number of crops a farmer may plant and harvest. Some projects are marginally successful while others are not and, of course, some farmers earn more than others.

As dissimilar as the location and style of ISAs are, there are patterns in the problems farmers must face. There are some success stories. However, even in ISAs with innovative farmers, competent and energetic extension workers, and where lands are less affected by adverse terrain and climate, there are problems.

At Carlos City in the Province of Pangasinan, an ISA had been formed and the irrigation system was under construction. Although not a part of the original project, a "before" and "after" picture was needed to find out if the problems identified in the older systems were being remedied in the newer ones. Labor for digging some canals was provided by the farmers, as it was for all systems. Here, however, a 270 meter cement-lined canal was also being constructed by outside labor, apparently because special skills were needed. Half the farmers are amortizing owners--they are paying off their land--half are tenants. These farmers did not face the problem of right-of-way in the installation of the system, although at other ISAs it had been an obstacle. At Carlos City, they are plagued with the problem of salt intrusion. To meet it, the Tagabagbunsod, or village "motivator," explained that they plan to advance their planting season to avoid use of water when salinization occurs. These farmers expect to double their income by producing two crops instead of one--mainly in rice. With an increase from 50 cavans per hectare to 100, they feel they can afford the system.

If A.I.D. thought that adequate water alone was going to solve the farmers' problems, it is no wonder the farmers thought so too. These farmers had little idea of what they were facing. They did not know how much their semi-annual payment would be for their substantial loan of P.215,000 ($30,000) at 6 percent over 12 years. Nor could they estimate the projected cost of electricity. They had no anticipation of electric current problems or the impact of rising fertilizer prices. Clearly, FSDC extension workers had not adequately prepared the farmers for this undertaking.

At some of the older, more established associations a pattern of problems has emerged: high costs of machinery and fertilizer, the breakdown of pumps, low prices for rice, inadequate credit, the unreliability and cost of electricity, post-harvest losses, and an unreliable marketing system.

Throughout the islands, relatively inexpensive pumping systems, either electic or diesel, are the sole economic means to provide irrigation. They rely on surface water and must be placed close to the source because of their limited capacity to lift water. With the prevalence of flooding and the frequency of typhoons, inundation of pumps is common. This causes breakdowns and raises the costs to the ISAs. Electric pumps are subject to frequent brown-outs and are often damaged by fluctuations in current, yet the cost of protective equipment is said to be exorbitant. The problem of an unreliable water supply is compounded by hand-dug, unlined canals which waste the water that is supplied, raising electric costs.

One of the major difficulties for many farmers is their inability to sell their product at a price that covers the cost of production, earns them a profit, or provides sufficient income to cover their debts. The governmental institution for buying and selling rice, the National Grain Authority (NGA), offers the fixed price of P.1.30 a kilogram--the highest in the country. Even though most farmers think this amount is too low, they are forced to sell their product at even lower prices to private traders because they are unable to meet the technical standards of NGA. Palay (unhusked rice) presented to the Authority must be 95% pure and have a moisture content of no more than 14%. In most parts of the Philippines, mechanical threshers and driers, which farmers cannot afford, are needed to meet NGA standards, which are geared to quality rice for export or elite internal consumption. The standards are necessary for international marketing and competition, but limit the farmers' ability to raise their income. Furthermore, if farmers sell to NGA, they often do not receive the funds for their produce for up to one month after sale and few are economically able to afford this or even a shorter wait. Farmers from Tococ ISA complained that "NGA

asks too many questions and takes too long." Also, the NGA automatically deducts from the amount paid to farmers their past due loan payments to Masagana 99, a government program to provide credit for seed and fertilizer. Farmers have complained about the increases in fertilizer costs that are going up faster than the price of rice. Increasing oil prices are likely to prompt the government to reduce their existing fertilizer subsidy even further. One farmer candidly remarked that he sold his fertilizer to obtain needed cash. Now, to finance even the modest amount of fertilizer that they use (in this ISA, about two bags per hectare, well below the recommended levels), many farmers must resort to the private money lender. He charges approximately 20% interest per cropping season--about five months long--or an annual rate of about 48%. With more bills, less cash-flow, little collateral and a low income, the farmers, especially the share tenants, are a credit risk. It is becoming increasingly difficult for farmers to pay their debts.

The ISA program is built upon the farmers' willingness to make productive investments in the lands they till. For small owners, the investment is wise. For leaseholders (who have a guaranteed right to farm the land) the investment is also attractive. But, for the share tenants, numbering over one-third of the farmers involved, who have no guaranteed right to remain on the land, the investment is probably unsound. These farmers, among the poorest in the country, must pay their landlords 20% to 30% of each crop. This is something of a windfall profit to their landowners considering that they do not pay for the irrigation system, that annual yields have gone up with irrigation, and that there is an opportunity for double and sometimes triple cropping. It is also another burdensome expense for the farmers.

Some ISAs have taken steps toward combatting their problems. Many have started group-buying and selling which they hope will have the benefits of economy of scale and offset transportation costs to markets. At one ISA, there are plans to construct a small impoundment to conserve their water supply; others are lining their canals. Another ISA has started an off-farm enterprise where the clay-like soil in the area will be transported to a new brickmaking plant at a nearby town. The ISA will use the bricks to line their irrigation canals and will also sell bricks to other ISAs and private businesses. To supplement their income, some family members work as day laborers: in some areas, they fish or women may sew or weave or sell vegetables at local bazaars. Although farmers are taking advantage of the limited opportunities they have, their relatively small measures do not address the structural issues such as credit and marketing, which are beyond their capacity to influence.

III. PROJECT IMPACT

A. Economic Impact

The relationship of water to farm productivity and farm income was taken into account in assessing the benefits of the ISA Small Scale Irrigation Project. Rice yields increased as did the opportunity for double cropping. Approximately half of the farmers involved were able to plant two crops per year and harvested more from each crop. The expectation was that with improved water control, all of the farmers would be able to double crop. This objective was not met. Overall rice production can increase by as much as two to three times over rain-fed production conditions. These increases in yield and achievement of production potential, however, require improvements in water supply, fertilizer applications and insect controls, and greater skill in on-farm water management. Irrigation alone is only a type of insurance, eliminating complete crop failure.

Although gross farm income, as expected, doubled and in some cases tripled with the installation of the irrigation systems and improved water distribution, costs tended to increase even more rapidly. This was in part because the price of palay tended to remain stable--farmers were receiving between P.0.80 and P.1.0 per kilogram of palay--while the costs of electricity, fuel, fertilizer, credit, and the drying and processing of rice increased sharply over the 1975-1979 period. Consequently, many farmers with less than one hectare of land were not able to cover production costs and still have sufficient rice available for home consumption.

The fundamental problem is that costs are rising faster than the farmers' incomes from their crops. A majority of farmers are already behind on their irrigation loan payments. In addition to the debt for their pumps, farmers are paying for electricity to run the pumps, for fertilizer, improved seeds and pesticides. In some instances, they are servicing debts from land reform as well. The rates of interest they are charged for credit and their large debt burden forces some farmers to sell immediately at market prices and to buy back later at higher prices for their home consumption needs. The price of rice is not rising and is not likely to rise. A time will soon come when the farmers' costs equal or exceed their income. When this happens they will either default on their loans or refinance. Since the life of their loans (12 years) is roughly coterminous with the life of their pumps, the alternative poses a dilemma.

In addition, double cropping requires that farmers spend more time working in their fields, leaving less time for off-farm employment that generates more income. With costs outstripping farm income and little time for off-farm employment, on an average, net family income decreased in most project areas.

Yet, the farmers and their families have no doubt benefited from the project; most say so and there is physical evidence in some of their homes. But beyond whatever irrigation has done to ease the material and physical burden of farmers, the emotional and psychological effect is also significant. Farmers seem to feel a sense of involvement and participation in the growth process of both the system and the community. It is they who built the irrigation canals, and chose to invest in the system. The benefits have been greatest for small farmers who own their land. The Vice President of one ISA had left the teaching profession to return to his farm. With irrigation, he said, it was now possible to make a decent living on his land, and this was the work he most loved. However, the picture is as yet incomplete. A whole series of Philippine Government policies are affecting the farmers' abilities to repay their debts and make enough money to defray rising costs. These policies, discussed earlier, are rice and fertilizer pricing, credit policies and marketing and procurement policies. As these are adjusted, the profile of the small farmer can be improved.

B. Social and Political Impact

Any government program that reaches the villagers after years of neglect obviously has political implications. However, ISAs are not, for the most part, politically charged institutions. This is probably because they are scattered all over the country, are relatively new, and do not include all villagers. Nor are they the only channel to the government for villagers. Other organizations, such as the barangay (barrio or village) association are more political and overt. If, for example, the villagers want a school, a health center, or a better access road, they seem to turn to the barangay association as their natural link to government. In general, the ISA is used for irrigation purposes only. There seems no "spread" effect. Participation in the ISA has been, however, an effective means of establishing and maintaining the irrigation systems.

At the village level, political, as well as social and economic position plays a role in the formation of the ISA and selection of ISA membership. In order to start an ISA, the

Institutional Officer (IO), who is young and may be female, works with the village leadership and discusses the concept of a village irrigation system. The result is that natural leaders--based on status, wealth, kinship, age, and education--become the leaders of the ISAs. In the short run, the ISA organization does not conflict with or overturn traditional power at the village level. In fact, it reinforces it. In the long run, however, as competence in agricultural production becomes recognized, traditional status may give way to demonstrated ability to farm successfully and to articulate farmers' needs to those in authority.

At present, the the Philippine government has not focused on the debt burdens of the farmers, but rather on increased rice production. Eventually, farmer and ISA debt will have to be their concern. The government may well be confronted with a confounding situation. Farmers will be unable to pay back loans to ISAs that, in turn, will be unable to repay the government. As farmers fall into debt, it will be harder to borrow money for fertilizer, good seeds and pesticides. This could lead to a decline in productivity--a major governmental concern. Clearly, the implication is a need for balance between the government's policy of broad expansion of irrigation for short-term national gains, and long term sustainability through a concerted effort that focuses on increased farmer income and alleviation of his debt burden. Without a balanced approach, the condition, while temporarily improved, will deteriorate over the long run. The social and political implications of such deterioration could be momentous.

C. Nutritional and Educational Changes

In almost all cases, including those in which the ISAs were experiencing trouble, the farmers have articulated the benefits they have gained from irrigation. They place great value on the reliability of their water supply, even when it is sub-optimal. Some farmers say that now life is definitely better. Before, there were the "starving months" when there was not enough to eat. Now, they can buy convenience appliances. This is not to say that the introduction of irrigation systems has closed the nutritional gap. Farmers never mention that extra income is used to improve food and nutrition for their families, although it is possible that they are not knowledgeable about the nutritional value of certain foods.

Rather, there were virtually universal statements that additional funds were used to pay school tuition fees. The farmers view education as the critical factor in social mobility,

and will invest in the future well-being of their children educationally rather than nutritionally.

D. Impact on Women

The effect of ISAs on the female members of farm families seems marginal. In several instances, however, women played an active role in the ISA. As one woman put it, "Times are hard and the men need much help from the women," while another, perhaps more delicately, smiled as she said, "We are like the outrigger, we give balance to the boat." All in all, ISA membership seems to reflect, rather than improve, regional variations in female involvement in production and management. While women play a role in the cultivation of rice, they contribute more to the family income by producing and selling piecework--embroidered cloth, or baskets--and by selling vegetables in the market.

The project has a greater impact in the employment of female Institutional Officers. At least half the IOs are bright and dedicated women who are sensitive and are able to interact with farmers. They have leadership roles in communities in which age, family connections, and masculinity are important. The experience in the Philippines should prompt A.I.D. to consider in what other cultures women might be trained in non-traditional work or extension activities in rural areas. The Philippine experience could be an important model.

IV. CONCLUSIONS

A. Major Findings

1. Providing water to the small farmer to improve production and income has been effective because of its visible and immediate benefit. However, to increase income beyond current subsistence levels to allow farmers to carry their debt, maximum use must be made of the total farm resources. This includes supplementing farm income by raising livestock, i.e., pigs, poultry, and fish, and engaging in complementary off-farm enterprises, maximizing production to improve quality and decrease post-harvest losses by using small farm machinery, and being provided adequate and timely credit for production.

2. The price of rice and the conditions under which it is sold are often inadequate to raise farmer income more than marginally above subsistence levels in many parts of the country. It is, however, sufficient to motivate improved production which

is the primary cause of increases in gross income. It is unlikely that the price paid to farmers for their crop will rise significantly, nor is it likely that farmers can receive the government-subsidized price without additional investment in post-harvest machinery, the credit for which they may not get and an investment they clearly cannot afford. The cost of fertilizer, although subsidized by the government, is draining income, increasing debt, and in some cases decreasing yields when farmers cannot afford to buy adequate amounts. Relief from this price-cost spiral is necessary if personal (farmer income) and national (quantity/quality of crop) goals are to be achieved.

3. Marketing support to small rice farmers provided by NGA has not kept pace with the increase in rice production over the past few years. Its facilities are inadequate, its administrative capacity strained, and its cash flow has shown signs of weakness. It is uncertain whether NGA will be able to purchase enough of the farmers' crops and whether farmers can meet NGA standards for quality.

4. A significant number of associations will not be able to meet their amortization payments because of the cost of continual damage to the pumps. As long as this method of irrigation remains the sole economic means to provide water, repayment problems should be expected.

5. Few farmers can carry existing debts or obtain additional credit given current production income. The delicate balance between investment and debt could easily become negatively skewed if careful financial management is not provided at both the farm and ISA level. The risk of the investment in irrigation must be considered against potential income and debt-carrying capacity, a simple principle which has gone unheeded. A.I.D. projections that ISAs would be at the breakeven point after three years do not now seem accurate.

6. The Irrigators Service Association is valid and effective because it has built on existing local leadership and is focused on a specific and immediate goal that is important to the farmer. It is not perceived by the villagers as having a role beyond improved agricultural production, because other organizations at the village level may be more representative of the village as a whole.

7. Those farmers being assisted under the FSDC program are the appropriate beneficiaries of A.I.D. assistance under the New Directions. Although not the lowest income groups in rural areas, they are--or have been--subsistence farmers whose income in cash and in kind places more than half of them below the

poverty level as defined in the Philippines. They are also the groups able to make best use of development assistance to improve their own lives and the lives of their children. These small-scale farmers are also excellent candidates to contribute significantly to the development of the country itself.

Because most farmers invest in the education of their children, and because primogeniture governs land inheritance, the growth of an educated, young rural population will intensify the need for off-farm employment opportunities as these persons enter the work force.

The beneficiaries did not mention the use of additional income for better food although it would be unwise to conclude that this was never done. Programming which assumes this direct link, however, is unsound. The role which crop diversification could play in nutritional improvement should also be considered.

8. The quality and coordination of GOP extension services will become increasingly important as the program expands both its irrigation and integrated farm systems. These services may not be able to be provided by the hard-pressed Ministry of Agriculture. Coordination of the FSDC program with other agencies of the government occurs at the apex, but there is little evidence that it is effective at the farm level. It is believed that the expansion of the FSDC program into other types of productive activity and its continued and rapid expansion of irrigation may well tax the Corporation's technical and administrative capacity and overburden the talents of its fine and young staff.

9. A.I.D. analysis in project papers has been overly and unnecessarily optimistic and has resulted in unrealistic expectations for performance. These were related to the price of rice, the hectarage that could be double cropped, the internal rate of return, and the efficacy of the ISA as an organization having an impact beyond production.

A.I.D. participation in this project has resulted in needed engineering adjustments. However, there was an overemphasis on commodities and infrastructure and too little on the agricultural technical assistance necessary for improved farm systems. In addition, financial analysis of the elements of farm system development were not carefully and realistically formulated. Project monitoring must be improved, particularly by A.I.D. direct hire staff who can provide the continuity necessary to encourage effective programming decisions.

B. Program and Policy Implications

The program and policy implications of this study center on three questions of importance to the A.I.D. program in the Philippines, and by inference, to A.I.D. programs elsewhere. These are: (1) Should A.I.D. continue to support the FSDC, and if so, in what way and for what purposes? (2) How might the policies of the Philippine government affecting the beneficiaries be improved? (3) What are the implications of this project for A.I.D. activities in other countries?

1. Should A.I.D. continue to support the FSDC, and if so, in what way and for what purposes?

FSDC has effectively demonstrated its capacity to form ISAs as the first step in the development of farm systems. Their greater need is for technical assistance in developing more sophisticated and complementary elements of farm systems. Therefore, the team recommends continuing assistance to FSDC, but shifting the project focus to consolidation of existing farming systems in operational irrigation areas. (For specific project recommendations, see Appendix B.) Any assistance provided by A.I.D. should not emphasize commodities such as pumps. Innovative possibilities should be explored to allow the Irrigators Service Associations to accumulate sufficient capital to make productive investments. (See Appendix A, Capital Formation.)

Should FSDC consider major new projects outside of the irrigation field in areas of A.I.D. priority, such as energy and ecological programming (tree farming, etc.), then technical assistance might be provided. Such technical assistance should focus on the links necessary to reach the rural poor.

2. How might the policies of the Philippine government affecting the beneficiaries be improved?

The Philippine government has evolved a series of policies that impinge upon farmer income, some of which effectively limit his capacity and the capacity of the rural development process. A.I.D. should analyze Philippine national policies to determine the extent to which these policies may adversely affect the totality of the rural development effort and our A.I.D. program. A.I.D. should then decide whether to approach the Philippine government on any of these policies to discuss what might be done to alleviate rural development bottlenecks, either with or without A.I.D. assistance.

a. Rice Pricing and Procurement Standards

If the government is interested in improving farmer income, the rice price policy and procurement conditions are obvious foci of reform. Without considering the marketing and pricing of farmers' products, A.I.D. investment cannot achieve their purposes.

b. Fertilizer Pricing Policies

The Philippine Government currently subsidizes the sale of fertilizer. Nevertheless, rice prices over the past several years have not kept pace with increases in the cost of fertilizer. With increasing oil prices, it is likely that fertilizer will continue to rise even if the government subsidy is maintained. Are there ways in which A.I.D. could intervene with the Philippine government to ensure that farmer income is not adversely affected and productivity does not decline? (See Appendix A, Capital Formation.)

c. Land Tenure

The share tenant has no guaranteed right to remain on the land. ISA membership, the team feels, should guarantee security of tenure for share tenants. This recommendation is founded on the need for equal standing for all members of the ISA, the willingness to invest in the long-term effectiveness of the ISA, and the incentive to take risks.

d. Landlord and Rent

The project has resulted in increased yields for the farmers and windfalls for the landlords. The landlord's percentage traditionally remains the same even if the farmer harvests one or two additional crops a year. A change in government policy limiting the rent on land to one crop payment calculated by averaging annual yields would be a more equitable arrangement. Thought should be given to landlord investment in the irrigation systems themselves.

e. Off-Farm Employment

The Philippines is faced with increasing population pressures that have in the past resulted in the fragmentation of agricultural land and reduced the size of farms to near minimum

standards. Yet the population pressures continue, with resulting migration into urban areas, and unemployment and underemployment in rural areas. Improved farmer income cannot be met from increased rice production alone except to a limited extent that is rapidly being approached in parts of the country. Non-rice farm income and other farm-related activities will assist the farmer and should also be the focus of A.I.D. attention. Beyond farm income there is a growing need for a determined government policy to disaggregate light industrial and agro-business employment opportunities. The Korean model is one that should be explored by the Philippine government. Off-farm employment is essential in the Philippines.

f. Credit Policies

Timely amounts of credit with reasonable charges directly affect the farmer's ability to have sufficient production resources and materials. Under the existing official credit systems, obtaining credit may require collateral, e.g., land ownership. Otherwise, it may only be available from private sources at high interest rates.

The subject of rural credit should be analyzed in its entirety as to availability, terms, and repayment scheduling to see if the present system of credit and credit servicing is, as farmers contend, a deterrent to optimal farm production.

3. What are the implications of this project for A.I.D. activities in other countries?

It is too early to draw too many implications from the assessment of this project for A.I.D. activities in other countries. However, some tentative conclusions should be explored as other projects are reviewed.

a. Village-level organizations, to be effective, should only be introduced when they focus around a clear and perceived need of direct benefit to the population.

b. Irrigation systems are not primarily the domain of the engineer. The comprehensive agricultural implications of such systems must be included early in project design if they are to be successful. Although engineering is necessary for effective irrigation, it is not sufficient. Irrigation projects should not be considered quick and easy means to expend program funds. Irrigation projects should not be developed in capital development offices, but in agricultural offices. As long as capital development offices exist in the field, there will be

pressures to regard the spending of funds as more essential than their effective utilization.

c. Field-level monitoring for rural projects should, whenever possible, be conducted by A.I.D. direct-hire staff, so that the knowledge and insights gained remain within the Agency. Contractors may be required as operating expenses become tight, but the Agency loses in the long run as a result of the lack of continuity in the monitoring process.

d. The intermediate links between any project objective and the goals to be achieved must be clearly identified and included as an integral part of the project strategy analysis. It is clear from this project that assumptions concerning these links in the design phase can very quickly become constraints as the project is implemented.

APPENDIX A

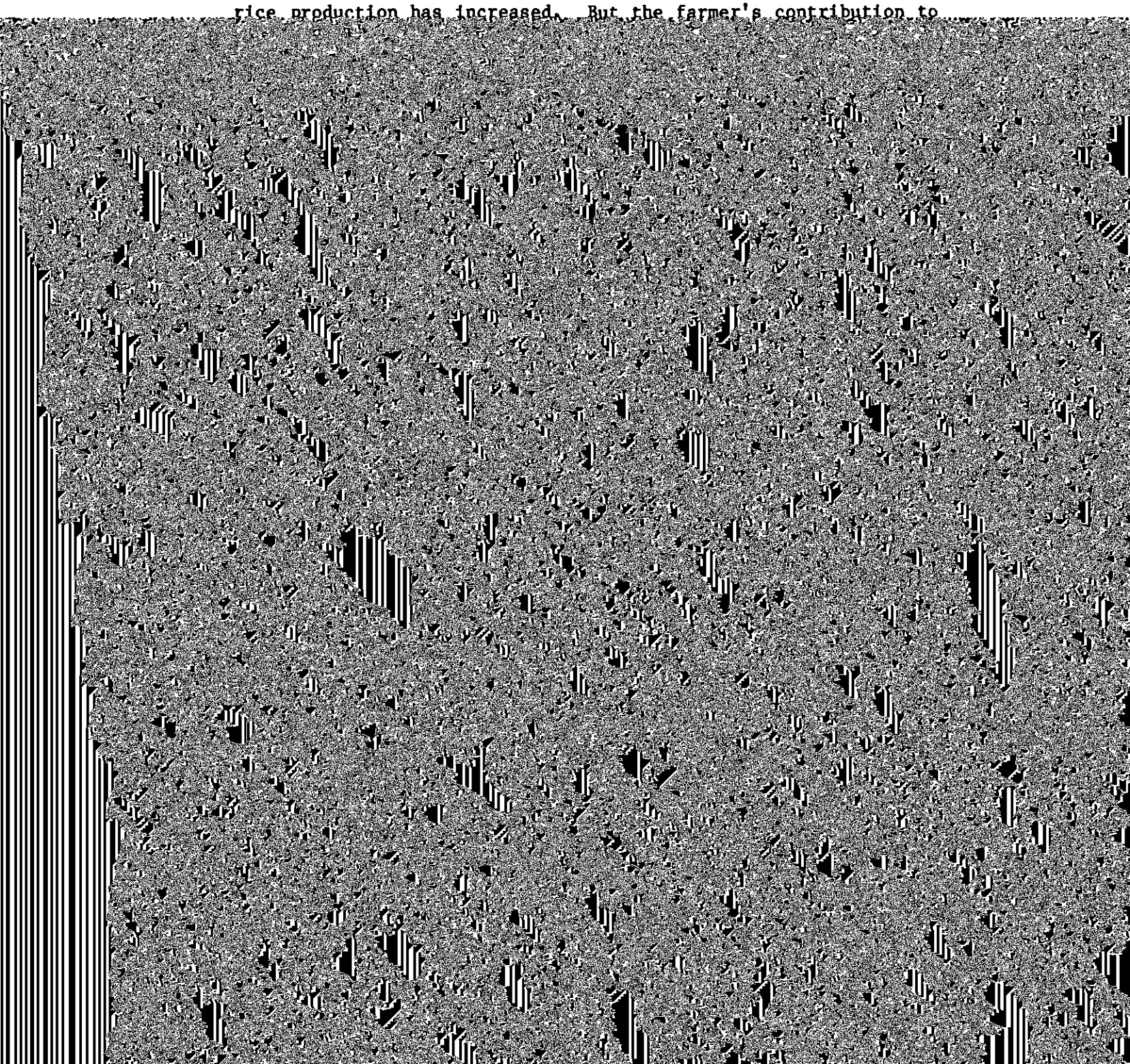
CATCH 22: DEBT VS. DEVELOPMENT

by

Susan Holloran

CATCH 22: DEBT VS. DEVELOPMENT

The Philippine farmer has assumed substantial debt by investing in an irrigation system, often on land he does not own, in the hopes of increasing his production and thereby increasing his income. He has willingly offered his labor both in the construction of the system and in planting and harvesting a second crop. As has been illustrated throughout this report, some development is taking place--cooperatives have been formed; the number of irrigated hectares has substantially expanded; and rice production has increased. But the farmer's contribution to



The elements which link the immediate project objective (irrigation) with the A.I.D.-intended goal of increased income, have evolved in this project as a series of mutually compounding constraints.

Irrigation System

Problems of the irrigation systems include pump failures, power fluctuations, improper installation, the high cost of amortization.

Credit

Credit for the purchase of inputs such as fertilizer, sprays, labor and renting equipment is inadequate both in quantity and in timeliness. Farmers are unable to secure more credit because of fixed costs, e.g., payment of irrigation fees, payments to the landlord and past debts. Credit at rural banks is tied to past debts from the Masagana 99 program. Untimely credit constrains the entire process.

Inputs

The high costs of inputs, particularly fertilizer and electricity, and the scarcity of diesel fuel often result in inadequate investment in production. This is compounded by the inability to increase short-term debt.

Production

The constraints in the production element of the system include: 1) sub-optimal use of fertilizer, 2) minimal crop diversification, 3) high costs of harvesting, 4) depressed price at harvest time, and 5) lack of adequate storage and machinery to reduce post-harvest losses or improve crop quality.

Marketing

The marketing system is often inadequate with respect to the purchasing, storage and disposal of crops. Quality standards are so high that farmers cannot meet them without additional investment in post-harvest machinery. NGA purchases of farmers' crops are tied to bank liens for previous debts to Masagana 99.

Income

Increases in gross income are offset by increased costs, the low open-market (non-subsidized) price and the lack of farmer flexibility in marketing. These factors all relate to increasing debt pressures and result in very marginal increases in net income.

Capital Formation

High costs and debts do not only constrain the optimal use of the irrigation production system as it now exists, but they also prevent further development of supportive farm systems activities. Lack of capital formation opportunity inhibits development growth and has serious effects on all other elements of the system. Maximum farmer indebtedness caused by the installation of the irrigation system results in an inability to secure additional credit for production inputs which decreases production quality and quantity. Debt pressure at harvest time and sub-optimal prices for the farmers' crops reduce their potential income. There is no surplus with which to form capital which might improve or build on the elements of the system.

Investment/Reinvestment

The kind of investment that improves production and income potential, reducing current losses, is difficult, if not impossible, for farmers given current trends. Funds for simple improvements and maintenance alone have put them at the economic margin. Investments in farm machinery, crop diversification, farm-related activities and complementary off-farm activities are all necessary to maximize the capacity of rural land and labor to achieve a productive farm system. Current inadequacies in other elements of the system make additional investment impossible.

Farm Systems/Optimal Use of Farm Potential

The achievement of viable farm systems is extremely unlikely given the current dynamics of the elements designed to produce such systems. The cycle of constraints is mutually reinforcing placing the farmer in a Catch-22.

There are constraints at each point in the system which, unattended, may cause the system itself to break down. Many have been identified in this report and elsewhere. The critical task for A.I.D. and the GOP is to identify which are most crucial--which constraints within which elements have the most serious spin-off effects on the viability of the entire ISA program and which points of intervention might have the most beneficial payoff throughout the system.

Because of their inherent importance in the system and because of the importance added by the GOP's desire to expand the project, several elements will be further considered. Marketing and capital formation are elements which are critical to the success of the farm systems development process.

B. Capital Formation

Continuing expansion of the FSDC irrigation program must include specific attention to the need for capital formation as an integral part of its strategy. Large capital investment by the farmers in pump irrigation alone will not yield an economically acceptable return on investment as long as the life of the pump is roughly coterminous with the life of the loan. Farmers must be offered investment opportunities beyond the life of the pump that can yield cumulative returns.

In the short time available to the team, two options seem worthy of further analysis.

1. Program Options: FSDC

In some cases, FSDC has extended the life of the loan from seven to twelve years. This has automatically meant some ISAs are theoretically ahead of schedule--a clear psychological advantage. Farmers view this as "security" against a bad year and, in a few cases, it allows them to store crops for a better price. In general, however, they continue to make payments as regularly as possible and in the amount fixed for the 7-year amortization schedule. The result is that the farmers are not benefiting from the advantage which the extension of the loan period offers them. Conversely, the GOP is not, in reality, providing them the opportunities that the extension of the loan term implies.

Rescheduling of the loan in real terms would be the more appropriate course. FSDC has two loan scheduling alternatives:

a. If farmers, due to extension of the loan term, are in effect pre-paid, FSDC could forgive its payment for a period of time and encourage farmers to use these funds to their best advantage.

b. FSDC could reamortize, thus reducing the annual (or twice annual) payment required from the farmers.

For each alternative, ISA farmers could use the capital in a variety of ways. If FSDC were to forgive its payment for all or part of the 5-year extension period and then resume collection at the current amortization schedule, then the farmers could:

a. pay off other debts which would help them start over and lessen their dependence on private borrowing (this might be advantageous to the Masagana 99 program as well);

b. invest in complementary sources of income (livestock, farm equipment, post-harvest machinery, storage facilities, crop diversification, etc.) to make optimal use of the farm and minimize losses; and

c. provide credit to ISA members at reasonable interest when it is most needed.

If FSDC reamortized the loan payments corresponding to the extended loan term and reducing the amount of the payment, then farmers could:

a. simply reduce their debt burden and be able to keep up with their payments.

b. pool the difference (or that portion of the difference they can afford to pay) and use it to their advantage in modest ways. They could use it to provide a credit source for input costs or to relieve their immediate cash needs at harvest which would allow them to try for a better price for their crops. Or they could use it to rent post-harvest equipment to reduce crop loss, and thereby increase the price for their crop.

In both cases, the rescheduling of the FSDC loan can and should be designed to improve opportunities for capital formation.

2. Program Options: A.I.D.

After the first week of site visits, it became clear that the high cost of fertilizers was a primary concern of the farmers in every ISA. The impact of this problem was perhaps even greater and more far-reaching than was the problem with unreliable, costly electric current.

Cost for fertilizer is approximately 90 to 100 pesos per bag with an average of 6 bags needed per hectare, i.e., 600 pesos per hectare. With fertilizer and water, a farmer can yield about 80 cavans per hectare for which he will receive about 45 pesos each or 3,600 pesos total. Seventeen percent of his gross sale will go to pay for fertilizer alone. When other costs of production are deducted--herbicides, seed, the irrigaton fee, the payment to the landlord, transport and help needed to prepare the soil, weed and harvest either through rental of small equipment such as a hand tractor or by hiring outside labor--the net income is indeed minimal.

Without fertilizer, yields decline, although labor expended does not, and the farmer's gross sale and income diminish. Production goals, which is the GOP orientation, are also unmet.

Premise: The farmer cannot assume any further debt without increased income. Since fertilizer is key to both production and small farmer income, and is the input which best complements the investment in water (irrigation) itself, fertilizer is an option for direct assistance to the farmer. For example:

A.I.D. could subsidize (grant) the cost of fertilizer <u>to ISA farmers</u> for a period of two years, preferably the two start-up years in which assistance is most needed. Farmers would "pay" the cost, but the funds would go to the ISA itself to allow for some capital formation in the critical early years. The farmer should pay for the cost of the fertilizer in order to not lose sight of the relationship between the fertilizer's cost and benefit.

Based on our field interviews, there are a number of opportunities for such a fund which can free the farmer from the vicious circle of debt in which he now finds himself, and

increase his income potential. The fund could be used for member credit, for diversified farm operations, for small farm equipment, as "insurance" to allow farmers to store their crop for a better price, to improve the quality of their crop to meet NGA standards, or for system maintenance and improvements.

The grant nature of this assistance is necessary to accomplish the objective--giving the farmer some breathing-space from a heavily debt-ridden situation. Maintenance of the current GOP fertilizer subsidy is also a prerequisite to successful capital formation and to maintenance of the high production yields intended by this strategy. And finally, financial management assistance must accompany the formation of such a fund.

Subsidizing the farmer through fertilizer avoids the very difficult situation of dealing with price (see Findings and Program and Policy Implications). It has a direct benefit to the farmer and to production. With wise use of capital, many of the current limitations on farmer opportunities can be removed and a more effective use of farm resources can be achieved.

C. Marketing: The Critical Bottleneck

A clear priority for A.I.D. Mission analysis in determining the effectiveness of this project is the capacity of the National Grains Authority to accomodate increased production. The physical capacity of its facilities, its administrative capacity and its financial resources have shown evidence of severe strain.

Referring to the warehouses' inadequacy in accommodating local production, one farmer stated, "The grain isn't inside NGA, NGA is inside the grain." In other cases, there have been references to a cash flow problem, preventing NGA from paying the farmers without delay. The worst case reported the delay to be as long as one month.

NGA is the farmer's only resource for the high support price for his crop. In addition, the investments he makes to improve the quality of his crop to meet NGA standards are for naught when NGA is unable to purchase it. An NGA bottleneck cannot only limit, but can reduce, small farmer income. From the perspective of the GOP, its own objectives are being thwarted as incentives for increased production and increased quality diminish. Additionally, many farmers with previous debts to the Masagana 99 program will not sell to NGA because of its tie up to rural credit. NGA makes automatic deductions from the farmers' crop payments to be applied to those previous debts. The capability of the farmers to meet NGA standards, their motivation to deal

with NGA administration and finally, the capacity of NGA itself to accommodate increased production--all appear to be constraints to an effective marketing system which is an essential support system for Small Scale Irrigation.

While we can state with confidence that the entire marketing system in support of the Philippine irrigation projects is currently inadequate, the degree of the problem varies among regions. A.I.D. analysis must determine the extent of the problem and the extent to which national or regional actions are necessary to correct it. Included in such an analysis should be a review of all A.I.D. supported projects which may be affected by this problem (for example, rural roads). Only then can a comprehensive understanding of and sound options for dealing with the marketing problem be achieved.

APPENDIX B

ECONOMIC AND TECHNICAL CONDITIONS OF PRODUCTION IN IRRIGATORS SERVICE ASSOCIATIONS: The Need for Comprehensive Farm Systems

by

Douglas Caton

Introduction:

The agricultural sector dominates the economy of the Philippines. Seventy percent of the population live and work in the rural areas: food and agriculture account for 60 percent of export revenues, 50 percent of the labor force, and 33 percent of the GNP. The agricultural sector consists predominately of small-scale farms which provide primarily rice and corn for domestic food and coconuts for export. About 85 percent of the country's estimated 2.4 million farms are less than 5 hectares, accounting for only 24 percent of the approximately 8 million hectares of farm land in the Philippines.

In terms of value added and employment, rice production is the single most important economic activity in the rural sector. Some one million rice farm families cultivate 2.7 million and of which 1.15 million are irrigated. Only irrigated land has adequate water to produce of rice. About half of all rice producers are tenants, the bulk of whom pay 25 percent of the value of the crop to their landlords.

The greatest gains in the Philippines' economy since the early 1970's have been realized in agriculture. Between 1972 and 1978, rice and corn production increased nearly one-third; the production of fruits and vegetables doubled. Irrigated farmland was expanded by nearly 60 percent; the rural road system was extended by one-quarter, agricultural credit nearly doubled; the number of rural banks increased seven-fold. An additional 230,000 rice and corn farmers, representing one-sixth of the total number of rice and corn farmers, gained ownership rights to the lands they till. Average income of the rice and corn farms with less than five hectares of land increased from $300 in 1972 to $350 in 1978.

Nevertheless, the outlook is to meet the demand for food. Agricultural output will need to grow at an average annual rate of over 4 percent during the next decade. This growth will have to come primarily from more intensive land use and increased yields. While there are still areas of unused, cultivatable land in the Philippines, these arable areas are not likely to be expanded at more than one percent a year over the 1980-88 period. There is also the question of bringing the estimated two millon small farm households with less than 3 hectares of land above the poverty threshold. Average farm income of this farm group was 2,550 pesos in 1978. The Philippine government's 1979 poverty threshold income index is 9,556 pesos for a family of 6.0 members. These socio-economic indicators mean that: 1) farm output per year will need to grow by over three percent to

account for three-quarters of the needed increase in production over the coming decade; 2) new lands need to be brought into production at the rate of one percent per year; and 3) farm incomes, based on the 1978 average, will need to be increased 4 times and then continue increasing at a rate at least commensurate with the rate of inflation, preferably higher.

The Philippine government has a policy of rice self-sufficiency; however, the Philippines has a history of having one of the lowest per hectare rice yields in Asia. The GOP is aware that to achieve significant increases in per hectare output of rice, new technologies will be required, irrigation systems will need to be expanded, and supporting policies and service improved. GOP investment in irrigation has been expanding rapidly. The National Irrigation Authority is the primary governmental agency responsible for water development and the larger irrigation schemes, such as the Bicol River Basin. The Farm Systems Development Corporation (FSDC), established on April 4, 1975 under Presidential Decree No. 681, was set up to deal with the production and irrigation problems of small farm communities (100 hectares or less) not adequately covered by the National Irrigation Authority.

Since improved irrigation is an essential condition and offers the best opportunity, given other inputs, to increase yields and enable the small farmer to produce more than one crop of rice, the irrigation focus of the A.I.D. and FSDC small farm program is well understood. Therefore, while recognizing the need for improved farm production practices and production "innovation" packages, both the A.I.D. contribution and the FSDC program to date have primarily concentrated on the "irrigation" aspects of the small farm systems involved in the Irrigators Service Associations (ISAs). However, this focus has tended to place irrigation up front with the ISA program being replicated in irrigation terms to the neglect of the overall productivity aspects and requirements. Even though yields have essentially doubled and cropping intensity has been increased by 50 percent, the production and income potentials have only partially been achieved. This is because the ISA farming operations and technologies in use have not adequately been dealt with in productivity terms, and because the farm production diversification opportunity available has not been sufficiently brought into play.

Additionally, irrigation schemes must be designed in terms of plant demand. To be economical the scheme must contribute sufficiently to yield or to flexibility introduced in cropping patterns or practices to pay for itself. Moreover, water can contribute no more to yield than existing technologies will permit. The findings of the ISA survey indicate that the

technical-economic considerations in added costs/returns were not adequately and sufficiently assessed in terms of small farmer production technologies and practices, cost-price relations, the credit and marketing constraints of the socio-economic environment, or the tenure status of the ISA farmer. As one Tococ ISA farmer from Pangasinan Province said when interviewed, "Right now after making my contribution to the FSDC loan for the pump and paying for fertilizer and insecticides, I have one peso a cavan left." This farmer has 1 hectare of land and is getting an 80 cavan yield.[1]

The production practices of ISA farmers (and perhaps of small farmers in the Philippines generally) can be characterized as having a high dependency on hand labor and minimum dependency on purchased inputs and machinery and equipment. This is a zero direct cost of production philosophy which attempts to maximize net returns and tenure security simultaneously. It is a characteristic of traditional agriculture, a charteristic which development inputs have the most difficulty dealing with and the most difficulty in changing. Both the Rice Research Institute at Los Banos and the Asian Development Bank (the Rural Development Section) have spent considerable time, effort and research on measuring the economic benefits of new technologies and the biological and technical constraints bearing upon the small rice farmer. Much of their work and findings, in the Philippines and elsewhere in Asia, appear to be directly applicable to the ISA farmer and other small Philippine farms.[2] The A.I.D. project cannot be faulted for considering irrigation as necessary; however, a fault does arise by reason of failure to consolidate and improve farming systems and to integrate irrigation into such systems.

The remainder of this appendix deals with essential and minimum conditions necessary to move the ISA and other small

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[1]The economic breakeven point calculated on the basis of rice production and cost information obtained from interviews with approximately 200 farmers.

[2]In the larger view, the small farm systems project is illustrative of the necessity to know the subject action options, and to have assessed the probable consequences of action, before a project paper is prepared. For example, the 51 percent positive internal rate of return to be found in the 1978 Project Paper is non-real. The actual rate is zero to negative for existing ISA farming systems. A need exists to develop accurate cost/returns budgets for representative ISA farms to determine the real internal rate of return.

farmers from the point of traditional technology and practices to increasing levels of productivity and income.

A. Economic and Technical Evaluation of the ISA Program

1. Introduction

Irrigation is a natural focus of rice economy developers because water (and water control) is highly complementary to modern seed-fertilizer-rice technology, and provides an opportunity for a second rice crop or diversified cropping. While studies show clear evidence of the importance of the role of irrigation, it is equally clear that fertilizer, insect and weed control and solar energy are complementary to water in producing high rice yields. Therefore, it becomes increasingly important to be aware of the constraints preventing effective utilization of improved rice production technology, including irrigation when it is used.

Lack of adequate water control is an overriding constraint to intensifying rice production. Rural development projects which center on irrigation should be governed by this constraint and its consequences. Since irrigation is considered a necesary condition to increase rice production and has great appeal since irrigation projects are both highly visible and absorb large amounts of capital, there is disproportionate pressure to put money into irrigation infrastructure.

The difficulty is that irrigation's appeal often leads to the productivity of the system being overestimated, costs underestimated, problems minimized or assumed away. And it is equally often taken as given that farms are connected to markets and await only for additional water to be transformed into a new productivity mode. As a consequence, implementing agencies often have unrealistic expectations of rates of payoff. Thus, these agencies encounter many problems and difficulties not anticipated as they go along, compounded by the overall problem of expanding the irrigation opportunity to others while needing to develop the farm production pay-off matrix to maintain program solidarity.

Assurance of program solidarity requires a precisely determined balance: starting each new system depends upon having in place essential and minimum conditions which will, by evolutionary processes, optimize the system. A major concern of the FSDC program in this regard should be the question of how fast and at what cost irrigation and water control systems should continue to be extended geographically without suitable attention

being given to productive farming systems and to the economic and land tenure environments in which they operate.

2. Necessary Conditions

The general problem of underemployment of the agricultural labor force is due partly to the slow growth of agriculture and partly to local institutions, particularly those controlling access to land and credit. These two factors are interrelated: under-investment and underemployment may be due to uneven distribution of land holding, or to capital being overpriced in agricultural uses. Correspondingly, capital may be overvalued in agricultural use, e.g., irrigation, even though the impact in productivity may be limited in the absence of other investments.

The landless and near-landless income issue has not been raised in the FSDC program, but the issue does underlie the total employment-income picture of the ISA. Barring further land redistribution, the only way to increase the income of the ISA near-landless and landless is to increase employment opportunity through crop diversification and associated rural industries and services. An expanded employment opportunity in agriculturally related activities, complementary to the ISA productivity objective, could add materially to income and reinforce the ISA institutionalization objective.

In its institutional dimension, the ISA concept requires additional individual and communal capital investments, as well as joint risk-taking. Likewise, expansion into other crops requires additional knowledge, equipment, structures, marketing procedures not easily come by, and risks not previously encountered. As the following paragraphs indicate, the problems facing the farmer are of such complex nature as to require joint FSDC and ISA farmer participation.

Rice yields in the Philippines for the period 1973-77 averaged 1.74 tons/hectare. This yield was 85 percent of the estimated hectare yields of all southeast Asian countries for the same period. However, the percentage of irrigated land in the Philippines was comparable to that of areas with better rice yields. This comparison either means that climatic conditions are quite different in the better growing areas or that production practices are quite different. Given similarity of climate and climatic variance the answer would seem to center on comparative production practices. An assumption (which seems likely) is that increasing rice and other crop productivity in the Philippines cannot be achieved by irrigation alone and, moreover, will not be achieved through irrigation except insofar as water control and more technology are applied. Adding water to existing technologies can do no more than fill the "water gap."

The productivity contribution of irrigation is a combination of water and other inputs. From the studies examined in this assessment, the real value contribution of irrigation is probably nearer 30 percent than the 51 percent specified in the Project Papers. Therefore, given expected annual yield variance of 15-20 percent due to solar energy and other climatic variation, the evidence indicates that irrigation by itself is limited in its contribution to productivity without complementary inputs. Water can add as much as one-third to increase yield, but fertilizer and other factors make up the remainder. Water is a necessary but not sufficient condition for improved yields.

Because both biological and economic constraints to yields in the Philippines exist in both the short and longer run, the findings of research, particularly that of IRRI, were reviewed. These findings, reporting only the methodology used in 1976 and 1977, indicate possible reasons for the gap between potential farm yield and actual yield. Both farmers' input levels and a high level of inputs were evaluated covering fertilizer, and insect and weed control. It was found that timing and management of inputs bettered farmer yields significantly and that higher levels of fertilizer were economically recoverable: 6.7 t/ha (38.5 cavans) in the wet season and 1.2 t/ha (57.4 cavans) in the dry season.[3]

The economic consequences of technological and socioeconomic constraints to increasing rice yields are evaluated in a recent IRRI publication. "Despite the publicized goal of national self-sufficiency in rice, the Philippines has for the past two decades been the second largest importer of rice in Southeast Asia (second only to Indonesia) .... The upward trend in production has kept pace with the growth in demand, but has on the average remained about 5% below the level required for self-sufficiency (based upon population growth rate of 3%) .... In short, the Philippines at present (1978) appears to have a

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[3]The experimental sites were located in Nueva Ecija, Camarines Sur, and Iloilo. A wide range of literature on the constraints to high yields on rice farms and the facilities of the world's foremost rice research institution is immediately available. A.I.D. is a significant contributor to IRRI, and to its research on production constraints. Methodologies and empirical studies on farm level constraints to higher rice yields relevant to the Philippines are contained in the attached bibliography.

strategy that results in rice self-sufficiency in 2 years out of 10."[4] The Barker et al. findings appear to reinforce the primary thesis herein: that irrigation is a necessary but not a sufficient condition on which to base cost/benefit estimates.

The May, 1975, PP reads, "Irrigators Service Associations are formed to set up and operate small irrigation systems.... The associations are the conduit for technical and financial service from various government and private agencies. They serve as pivotal centers of information, skills development, training for self-government and other cooperative endeavors geared towards bolstering the productivity and income of the members. Irrigation systems, improved farming methods, processing and marketing practices as well as innovative technology designed to maximize the use of labor, capital and land utilization are introduced to strengthen the status of the association and in turn produce important beneficial effects...."[5] The A.I.D. Project Papers should have, perhaps, contained time, sequencing and essential component composition, and necessary linkage required to set up and operate the more effective farming systems proposed. Also, the A.I.D. "supportive" projects listed in the PPs are not linked through possible integrating mechanisms with the FSDC program.

To determine the extent total irrigation and cropping systems were being introduced, the evaluation team visited 23 ISAs. Comprehensive farming systems development planning is not yet in place at the ISAs visited. Improvements were, however, being introduced or experimented upon by the farmers themselves and/or by the farmers and the IO, together (insofar as the IO was in a position to do so, or had the technical knowledge and experience to be of assistance).

The findings of the evaluation team, while supportive of the purposes and goals of the FSDC program, indicate that when the small farmer system program is looked at from the bottom up: 1) not enough is trickling down of immediate direct benefit to farmers; 2) FSDC is dealing with one, sometimes two elements, in loan terms, of a complete irrigation system; 3) the farming

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[4]R. Barker, E. Bennagen and Y. Hayami, Rainfed Lowland Rice as a Research Priority - An Economist's View, IRRI Research Paper 28, May, 1979.

[5]Philippine Small Scale Irrigation, USAID Project Paper, May 1975.

systems concept is not being implemented as yet, and 4) most IOs are not sufficiently trained as analysts or as agriculturists. Additionally, the IOs are without essential transportation, and instead of working with one ISA as originally planned, they now may be responsible for as many as five to six (which may be widely scattered). Rough ISA farm budgets constructed by the evaluation team suggest that the "break-even" point for farm size and yield is 1.0 irrigated ha. and 80 cavans of rice per crop, while yields have essentially doubled the opportunity which exists for economical increase of an additional 40 cavans per hectare. This evidence strongly suggests that FSDC determine ways to improve the productivity of its ISA farms.[6]

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[6]An opportunity cost for labor was used in the team's farm cost calculations. The opportunity cost was taken to be equivalent to the value of "polished" rice used in home consumption. However, had a returns-to-labor format been used, the value of home consumption would be considered income to the farm. In this instance returns to investment, maintenance or recurrent costs, and taxes would also be subtracted from gross income. The FSDC net farm income calculations include home consumption of rice produced as farm income (equal to saying that the opportunity cost of labor is zero). FSDC's calculations are a perfectly valid way of estimating returns to labor. The two calculating mechanisms are comparable--one has the purpose of measuring comparative advantage and the other the actual returns to labor. However, opportunity cost is a stronger analytical tool because it gets at the question why farmers do or do not produce more than the observed production levels, e.g., opportunity cost is an economic measure; home consumption as income is an accounts measure.

The team's estimate of average net farm income and the economic break-even points under 1979 conditions by farm size and yield factors came out identically with those of FSDC except for the way in which labor was handled: in the team's case as a cost, and in the FSDC case as income. The team's argument is based upon the rationale of comparative advantage of farming vs. alternative employment opportunity, and on the fact that ISA farmers were not exploiting the apparent economically recoverable productivity gap above labor costs. That is, the ISA farmer was saying to the team that they considered the MVP of labor to equal zero beyond the point of covering subsistence; indebtedness; tenure payments; and items necessary to general farm family well-being under existing cost, price, and available technology conditions.

The rural development opportunity and economic reality are too critical with too much at stake in the way of rural people's expectations to do otherwise. An alternative to current programming would be to develop a second FSDC arm with a farming systems staff, comprised of mobile, well-trained, multidisciplinary, area teams to handle the farming systems "institutionalization" end, leaving the current IO system with the irrigation implementation.

3. ISA Economics

Current economics of the ISAs are marginal, bordering on sub-marginal, in both cost and pricing orientation, and actual costs/returns.[7] Rates of unit cost increases are also beginning to outrun productivity. The farmers and IOs are intelligent and hardworking, but the technical and economic environment is constraining development. (See Appendix A.) Farmers are also severely hampered by past debt burden, tenure insecurity, rental payments, and narrow operating margins and find it difficult to increase their productivity. Irrigation can be a means of doubling yields but to get double yields a farmer cannot live by water alone; he needs commensurate fertilizer, insect and weed control and improved production practices and implements.

While acknowledging time and data limitations (a check against data contained in small farm studies of IRRI and ADB, however, discloses data comparability) the evaluation concluded:

a. The ISA farms visited were averaging 80 cavans of rice per cropping season with good fertilizer and water, insect and weed control practices on the irrigated hectares.

b. One hectare of irrigated land and an 80 cavans rice yield appear to be the costs/returns breakeven point above rental shares for a farm family of 6 members.[8]

c. Rent requires 25 percent greater yields to break

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[7]Farmers' cash and loan debt positions frequently cause farmers to sell "short" and buy "high."

[8]The majority of ISA farmers visited had 1 ha or less of irrigated land.

even, i.e., a yield of 107 cavans of rice. Few ISA farmers on Luzon claimed to be getting these yields.

d. On a year-in year-out basis, yields may vary as much as 15-20 percent. Therefore, while farmers will most probably get yields of 80 cavans next season, a yield as low as 60-65 is possible.

e. Barring further farm size increase, the ISA has several options: 1) get rice yields above 100 cavans, and/or 2) diversify.

B. Possible Considerations Relevant to the Socio-Economic and Technical Status of the ISAs

1. Concept

Since mid-1975, FSDC has, in its own words, "been undertaking integrated rural development at the lowest level in the fields of the small scale farmers of the Philippines." While the ISA program involves the two main elements of rural development, income and production, it does not have the broader employment dimension required of rural development programming. It has been confined to agricultural production and, specifically, to the water constraint. The FSDC program is, however, potentially one which could effectively integrate farm production and marketing processes for ISA farmers.

The 1978 A.I.D. Project Paper stated that the project would be viable under almost any condition.[9] This conclusion is based upon a calculated internal rate of return of 51 percent. However, the realized ISA loan amortization rate in 1978 was 30 percent, down from 71 percent the previous year.[10] Costs/returns budget analysis of representative ISA farms visited by the evaluation team supplies at least partial answers as to why this is so.

The FSDC program is still primarily in Stage I, Phase 1.[11] Relative to the original stage-phase time scheduling, the problem

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[9]Page 38, Small Farmer Systems, USAID, Project Paper, March 6, 1978.

[10]Audit Report, General Accounting Office, November 1979.

[11]See Philippines Small Scale Irrigation, USAID Project Paper, May 1975.

is geographic expansion vs. area consolidation and integration. FSDC is apparently under great pressure to expand its irrigation component as rapidly as possible and has not, therefore, had the time, money or staff to consolidate ISA production-marketing systems as initially planned. Even so, it is an open question whether FSDC has the staffing capability to provide an adequate conceptual and analytical framework for program implementation. The formulation of an ISA production development model could provide necessary guidance for the production-marketing scheme initially envisioned, together with labor productivity value maximizing criteria.

In labor value productivity terms, two project design difficulties are apparent. First, instead of starting with on-field water control as the given, or necessary, condition and tracing back to the water source using amount and quality of water specifications, neither water demand nor water control are specified. The irrigation system task is waived, apparently, as being an engineering assignment. Second, FSDC is dealing with a rural development transitional problem of complex and confounding nature: How to move the traditional farmer to more productive or modern stages. The first question is, can the farmer be moved at all? Does he have sufficient resources and/or access to resources? The second question is, what does it take to move him?

A transition model is required: one which can account for the essential and minimal conditions required and which can also account for the attitudes and adaptabilities of the human factor. Single factor models, e.g., the mainland China model which equated maximizing labor with maximizing productivity, frequently fail. A labor-land-capital equilibrium model is required. But no model is infinite: all are finite by reason of scarcity of land relative to population (labor) growth, rising capital costs, or because land, capital or labor are not commensurately and continously substitutable to maintain productivity.

Does FSDC have a small farming system programming capability? If not, to successfully implement its planned farming systems development program phases, it must install and refine this capability. At present, the ISA farmers are, essentially, providing the farming systems improvement leadership. There is no reason to believe that without additional technical and financial help, they will be more successful than in the past. The FSDC program has given the ISA farmer hope and has provided impetus for production improvements. Unless consolidated and solidified, this impetus could be lost.

Farmers feel they are better off: however, they also know that costs are pressing in on them. They also know they can do better and they are looking for ways to get more information and other tools to help themselves. Each successful ISA can be, and will be, a multiplier of itself. The multiplier or spread effect of the successful ISA could be FSDC's most important rural development contribution. Therefore, it was thought appropriate to include in this section a statement on essential and minimum conditions for the ISA to become economically successful.

2. Essential and Minimum Conditions

Essential and minimum conditions for the small scale traditional system to achieve the point of self-generation include provision of the following:

a. an approach in terms of the total water requirement and as a dual technical-economic system governed by the condition of adequate water control (defined by the needs of the crops, or array of crops being, or to be, produced).

b. Farming system plans which (a) specify water need inputs, and management, (b) make factor-product, product-product, factor-factor comparisons, and (c) make cost-return comparisons.

c. Production constraint analysis which estimates the probable effect of constraint removal on farm production totals and net income flows. Important among these are:

   (a) quality of the natural resource base;

   (b) sufficiency of water quality, timing and quantity;

   (c) security of tenure as it affects capital formation and risk-taking;

   (d) credit by timing, amount and cost; and

   (e) access to markets, transport and price.

d. Production condition analyses on farm costs and net returns:

   (a) product price-product cost relations and trend impact;

(b) availability of factors and access to maintenance and other services;

(c) education and extension; and

(d) research, experimentation and demonstration.

e. Institutionalization:

(1) Institutionalization means bringing people together on a sufficient number of common points and endeavors as to give the institution essential dimension and character to ensure its survival.

(2) The main, if not the only common point, of the majority of the ISAs is mutually agreed upon debt obligation, water scheduling, and primary canal maintenance. Such agreements are more contractual than institutional.

(3) The ISAs will be institutions only when they are fully integrated in a socio-economic sense.

f. Maximized net returns. Given farm prodution as the objective, and income as its derivative, net returns will be maximized when:

(1) farm labor is allocated among tasks and between enterprises in accordance with its marginal value productivity,

(2) capital is substituted for labor on the basis of reduction in unit costs of output, and

(3) knowledge (least expensive factor) is substituted for both capital and labor on both a product and unit cost basis.

Risk and uncertainty with respect to production-marketing costs, prices and the effect of climate and weather on yields are taken into account by the ISA farmer. Productivity estimates must be adjusted to account for price, weather and such other risks that the farmers may take into account. The effect of tenancy or security of tenure is also a relevant risk affecting economic survival. Most ISA farmers are lease-holders or share croppers. Few own land. The tenant is legally obligated to help pay the FSDC loan, yet his tenure status, and thereby his ability

to pay, are not secure. From the ISA farmers' interviews, it was determined that under land reform the farmers presumably have received land titles, but must pay a "fixed" price for the land. The "fixed" price of land is the capitalized price based upon 1969-71 earnings, a figure which appears to be close to the current market price of land; a price which most ISA farmers claim they cannot pay out of current earnings. The ISA farm budgets prepared also conclude this to be the case.

Farm capital formulation, i.e., willingness to invest in production enhancing machinery, equipment and infrastructure, is definitely related to tenure status and to price and weather uncertainty. This is because ISA farmer's financial outlay will be geared to survival, not productivity, when his estimates of his earning ability are small and the risks are great. Therefore, without risk insurance and a capital formation opportunity created, an intermediate measure of successful impact on productivity must be accepted.

C. Discussion

1. In planning A.I.D. projects designed to benefit the small farmer and the rural poor, the socio-economic and technical basis of such programs should be ascertained through field level investigation and analysis. Seldom can a strictly agriculturally oriented project generate farm increasing income and economical employment without simultaneously generating agricultural productivity, and without including the expressed needs of the farmer.

2. The need to develop adequate production systems emphasizing the productivity potential provided by water does not minimize the importance of the need to continue to develop more irrigated land which can be established as being economical. Recent IRRI studies show that half or more of the rice productivity gains in Asian countries 1965-73 (roughly) was accounted for by expansion of irrigated land. In the Philippines, water contributed 35 percent, fertilizer 44 percent, and other factors the remainder of the annual rate of production growth 1965-73. However, only by improving rice production response to fertilizer above its current level will it be possible to meet the expected 3 percent rate of growth in demand.

3. Moreover, studies on factors constraining farmer's rice yields show that low water control and water (irrigation) management always has an overriding effect on yield.[12] With

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[12]E.g., functionally water control relates to the number, frequency and duration of "stress days."

respect to these points, IRRI currently has irrigation economics research underway in four general project areas: (1) measurement of the yield-constraining effects of water and other factors; (2) evaluation of alternative intensities of on-farm water management; (3) identification of the distribution of the direct benefits of irrigation in a previously rainfed area (Iloilo); and (4) systematic evaluation of the relative economics of various types of irrigation system in the Philippines.[13]

4. To give the FSDC program the credibility of its name, a true "farm systems" dimension must be added to its irrigation infrastructure activity to achieve the greater increases in production of rice and other crops. At the same time, the program should set up the agro-economic criteria specifying water requirements and irrigation systems design. For the success of the ISA program, this must be coupled with more equitable income distribution through tenure security and related land reform efforts.

5. In the above regard a good start has been made and an effective program is underway. This discussion is merely intended to point up that still more remains to be done to consolidate what has been accomplished so far, and to ensure not only more income, but more income stability, for the ISA farmer. Therefore, the program should, unquestionably, continue to move forward on its present front, but the program should also, for those ISAs developed, concertedly move forward on the farming system front as set forth in the project design. On this point, it would seem that allied projects in the Mission's portfolio, for example, the Integrated Agricultural Production and Marketing project, should now begin to be at least in part directly focused upon the ISAs.

On the A.I.D. side, this is a small farming system project. To ensure payoff to the beneficiaries, the project contribution of the U.S. should be under the direction of agriculturists knowledgeable about technical and socio-economic criteria necessary to have beneficial impact on the small farmer: first in his traditional status, then in a transitional stage, and finally, achieving land-labor optimization.

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[13] Studies in Water Management Economics at IRRI, Workshop Paper, Herdt, IRRI, March, 1979.

2. Recommendations

a. After consultation with FSDC, a new PID be prepared under the direction of the Agricultural Office of the Mission containing, as outlined above, provision for:

(1) a separate crop and farming system component;

(2) a continuation of the irrigation components, subject to (3) below; and

(3) that irrigation be taken as a total land-crops-water system and that its design achieve necessary on-field water control.

b. That "area" multidisciplinary assistance be directly related to development of appropriate farming systems, ISA by ISA.

c. That the economic and constraint issues identified be addressed as rapidly as possible in disaggregative farm level studies.

d. That the International Rice Research Institute be viewed as the primary source for technical assistance and research.

e. That, should training in rice production technology or rice economics be essential, IRRI be contracted to provide such training.

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APPENDIX C

FSDC-NIA: A PUZZLING RELATIONSHIP

by

Susan Holloran

FSDC-NIA: A PUZZLING RELATIONSHIP

We all thought, even before leaving Washington, that the Farm Systems Development Corporation, which was operating the Small Scale Irrigation Project in the Philippines, would tell us everything we wanted to hear. Well staffed with enthusiastic people, supported within the government bureaucracy and well attuned to all the rhetoric of USAID, it would, we thought, not give us any additional insights, but confirm or cause us to question previous assessments of its capability.

To really test that capability and to assess the impact of the project on the participating small farmers throughout the

would have to look rather at the quantity of its --at FSDC's Institutional Officers (IOs), the basic unit that the project was designed to assist. Perhaps, we thought, after three years of rapid expansion, the capacity of this organization was beginning to show signs of strain.

In Washington, reviewing background material for our trip, we were alerted and somewhat troubled by the seemingly duplicative nature of another GOP institution, the National Irrigation Administration (NIA). It was a much older line organization, also directed to expand the irrigable land area of the Philippines, to increase rice production, and to improve rural development. All the large-scale projects had been done under its auspices, mostly gravity but some pump systems. Technical skills were an integral part of the institution, and NIA was now turning over many of its smaller systems to FSDC.

The most significant program, the Bargangay Irrigators Service Association, BISA, was turned over to FSDC in 1975. It also was organized around user associations and was designed as a national program to expand irrigated land, support farmer associations, and provide training and credit.

We began to wonder about the relationship between FSDC and NIA. Why was the new government corporation formed? Was not NIA the logical choice to implement expanded work in irrigation, perhaps through a new NIA organizational unit? Did the new emphasis on community organization and farmer participation in irrigation systems mandate a new organization? Our interviews with government officials and with the academic community in Manila confirmed our suspicion: there is, indeed, much tension between FSDC and NIA.

FSDC

On the one hand, FSDC is a relatively new, well-funded, dynamic organization, with a very young Peace Corps-like staff whose mandate was recently expanded by Presidential Decree No. 1595 to allow them to engage in an almost unlimited number of activities to promote rural development: forestry, fishing and off-farm industries. NIA on the other hand is the older, established bureaucracy, heretofore the sole focus of irrigation projects and perceived as somewhat behind in the trend to focus increasingly on community organization and local participation in rural development and nation building. Its staff is older, more experienced but perhaps less in tune. It feels the need to demonstrate its competence in contributing to this new focus and to avoid isolation as FSDC expands its programs and grows in prominence. The difference, said FSDC, "is that we are concerned with farm systems not just with irrigating land. Our goal is to have federations of ISAs which are a force in nation building." The FSDC program has three stages: 1) irrigation, 2) innovation packages and 3) agro-business.

These are also identified in the two A.I.D. follow-on project papers: Small Farmer Systems I and II. We decided to look closely at the progress of the "system" approach. We were concentrating our impact evaluation on ISAs which were started during the first project in 1976, Small Scale Irrigation. These had the longest history of operation and would, presumably, be the first to move to the second stage of the program.

We were also told the FSDC was building dams (under its Water Impoundment Program) in addition to its small scale communal pump and gravity systems. In house it is building its own technical capability and will no longer rely on contractors for its engineering and design work.

NIA

"We made mistakes in the past" said NIA, "and we are moving now to emphasize community participation in our projects. We're training our engineers to work in this context in developing communal systems."

Larger farmer organizations, covering approximately 1,600 hectares each, are being developed at NIA. It gave its small and medium-sized pump programs to FSDC and currently has "tie-ups" with FSDC to do the organizational work in NIA communal gravity system construction programs. At the same time, however, NIA is carrying out four pilot projects to shore up participation in,

creation of, the organizational base of its projects. Now, it too has community organizers (CO) working with farmers during construction and is designing a social profile component to help its organizers and engineers deal with potential conflicts and build on potential social strengths in each project site. Because financial management is a critical problem, their COs teach simple recordkeeping and try to learn from the farmers about their financial needs.

We saw two organizations--each trying to strengthen its weaker side. Should they succeed, each will become increasingly duplicative of the other. The impact that this strained relationship and lack of coordination might have in the field--on the small farmers themselves and on the GOP's ability to help them effectively--needs more time to assess. In some way, however, the team believes that this conflict is representative of relationships within the larger context of the political-technocratic development process being played out in the Philippines.

APPENDIX D

THE ROLE OF THE INSTITUTIONAL OFFICERS

by

Thomas Hobgood

The Role of the Institutional Officers

The Farm Systems Development Corporation (FSDC) seeks to increase agricultural productivity and farm income by establishing small scale irrigation cooperatives. In the field, Irrigators Service Associations (ISAs) are organized by Institutional Officers (IOs) who actually live in or close to the community where the project is located. IOs carry out a number of functions including providing entry of the FSDC program into the community, organizing the ISA itself, arranging for training of ISA members, coordinating and procuring services from other government agencies, and facilitating farmer decision-making by advising the farmer-members on alternative approaches to solving various technical and organizational problems. IOs also act as a contact or liaison between FSDC provincial offices and the ISA in the field.

aining of IOs

The recruitment and training of IOs is designed to ensure that they are not only technically qualified but are attitudinally committed to the program goals as well. Competition for the IO positions is intense since many more applications are received than there are available positions. Previously, IOs were usually generalist, but currently FSDC is seeking people with more technical background such as agriculture, engineering, community development, business or economics. IOs are usually graduates from local educational institutions and over one-half are women.

Prospective IOs must go through a battery of tests including IQ tests, personality tests, group orals to test leadership and verbal ability, as well as a panel interview. An important part of the recruitment process is the Pre-Service Field Orientation. After the prospective IO has passed the various tests, he or she is sent to the field for one week to conduct a baseline survey of potential members of an ISA. This gives the prospective IO the opportunity to experience the field conditions in which he will live. During this one week period, the potential IO is also rated by other IOs and the recruitment officer regarding his effectiveness in the field situation.

The last step in the screening process is Basic Institutional Development Training (BIDT) which is three weeks in duration. During this time the IOs are taught how to organize the ISA. The training includes community organization, FSDC-BISA program goals, rural development theory, and the values and attitudes of the Philippine farmer. Methods used in the BIDT include sensitivity training, role playing, group discussions,

case studies, workshops, and interviews with ISA farmer-members. At the end of the three-week period, the prospective IO is rated on his knowledge (40%), skills (40%), and attitude (20%), and must attain a score of at least 85% in order to be considered qualified. IOs meeting this criteria are then fielded and are under observation for a six-month period, at the end of which they must receive a satisfactory performance appraisal report.

Basic Management Training (BMT)

After the 6-month probationary period, IOs are sent to BMT which lasts three weeks. This training program teaches the IOs how to train farmers in association management and recordkeeping.

Specialization Training

The needs and stage of development of the individual ISA will determine what type of specialization training the IO will receive. This type of training may include rice production, water management, farm machinery, financial management, or training in the use of a number of innovation packages. Training in the use of innovation packages helps the IO to assist the ISA in diversifying beyond just irrigation. The innovation packages include organized buying of inputs, organized selling of palay, seed production, institutional credit, organized rice production, farm machinery, or applied research via demonstration plots.

The IO Team Approach and Use of Farmer-Leaders

Formerly, each IO had to handle only one ISA. As the program has expanded, it has been necessary to develop a team approach to organize farmers. A team is composed of three IOs, an agriculturalist, a financial manager, and a technician-engineer. Each IO has primary responsibility for four ISAs and calls upon the other members of the team when needed.

In addition to the team approach, FSDC has developed the Tagabagbunsod (TGB) scheme to help solve its manpower problems. The TGB, which literally means motivator or facilitator, is a farmer-leader who is respected by members of the community. The TGB receives two weeks of training which emphasize the development of skills that will enable him to take an active role in the development and organizaton of his ISA. This scheme was designed to complement the functions of the IO. While the TGB takes the active role in doing the organizational work, the IO

acts as his backstop and helps coordinate and facilitate the work of the TGB.

Entry into the Community

An interesting aspect of the IOs job is that he provides the initial entrance into the community for the FSDC program. After the provincial office is notified that a group of farmers are interested in irrigation, the IO is sent out to the community to identify the leaders in that community. These opinion leaders are most often the barangay captain, respected farmers, or other members of the community who have some power or status. These leaders are then organized into core groups which do the initial groundwork for forming the ISA. These core groups may consist of a financial group, a technical group, and an organizational group.

Since FSDC recognizes that local leaders must be involved for the project to succeed, these leaders are sought out before the ISA is even formed. In this case, it can be said that the FSDC supports the existing social order. In the long run, however, as farmers improve their income, leadership skills, education of their children, and become more independent of existing patron-client relationships, power and status in the social structure of the community may gradually change. In this sense, the FSDC program may be viewed as a reformist model of rural development rather than a more radical approach which seeks immediate change in the social structure.

APPENDIX E

NOTES ON METHODOLOGY AND PROCEDURES

by

David Steinberg

Notes on Methdology and Procedures

As soon as this project was proposed for impact assessment, the team recognized that it would be impossible to undertake a statistically valid study that would sample a sufficient number of subprojects so that the impact of these subprojects on the lives of the farmers affected could be accurately determined. At the same time, the team recognized that important vested interests existed that might push the team into predetermined avenues of exploration that might skew the results of the inquiry. The team found previous evaluations by A.I.D., GAO, and by the Farm Systems Development Corporation (FSDC) to be suggestive but inadequate for determining farmer benefits. The inquiry soon became more urgent, as a proposed PID for the third loan for this activity was in Washington, and on arrival in the field, the team found that FSDC was in the process of preparing a

that originally totalled some $50 million. As a result of criteria were developed that would allow the team access to subprojects that seemed conceptually important in terms of the farmer, the association, and the Corporation.

Steps were immediately taken to preclude field visits to sites pre-selected by other than the team members. It was determined that before any major field visits were undertaken, a pretest of an informal questionnaire would be made in the area within one day's travel of Manila. The team recognized that the provinces close to Manila might not be representative, as they were generally better off, communications were easier, and organizational support to the associations might be of a higher quality. Nevertheless, it was felt that pretesting was essential, and the validity of that approach was quickly recognized.

The criteria for choosing the associations for the pretest were determined by the team in Washington. They included associations that were older (whether or not supported under A.I.D.'s first project) as it was likely that such associations had a longer experience of using irrigation systems. This would make it most likely that the impact of irrigation on the lives of the farmers was more pronounced, that associations were successful in terms of repayment to the corporation, and that associations had experienced financial difficulties in repayments for any reason except those arising from natural disasters. The team was also interested in learning of the degree to which tenure status affected the associations and farmers incomes. Thus a mix of owner operated, amortizing owner (under agrarian reform), and share tenant associations was suggested.

On the basis of these criteria, FSDC tentatively selected eight associations for possible visits, all of which were within two hours by car from the outskirts of Manila. Of these, the team chose five to visit in two days. They represented a mix of financially successful and unsuccessful associations of differing tenure status. After returning to Manila, the team analyzed the results of the field trials and undertook two extensive field trips to different ethnic and economic regions. The first, for five days, to the regional office of the Corporation in Baguio in northern Luzon, and later to the regional office of the Corporation in the Visayas in Iloilo. A total of 23 associations were visited in 9 provinces providing a reasonable array of associations in differing stages of development.

Although 23 associations were visited, the team was unable to cover all problems that should have been explored. For example, the problem of schistosomiasis is endemic in parts of the Philippines, especially in Leyte, Samar, and Mindoro. Although the project paper indicated that those areas would be avoided, in fact, asociations have been formed in those provinces. The Corporation is unclear what monitoring of potentially serious problems exist in those regions. Further, in the time available, it was impossible to visit associations that required a one-half day walk from the last four-wheel drive entry point. Thus, those most remote associations were not covered. Associations in the Muslim areas of the southern Philippines were also excluded, as they were felt to be unrepresentative of the problems facing the majority of associations within the country. With these exceptions, the team has felt that a representative sampling of associations has been visited, even if such sample cannot stand up to statistical scrutiny. The team has visited projects that illustrated the following types of variables: financially successful projects; financially troubled projects; projects with technical irrigation problems, and some without; those that had been able to double or even triple crop, and some that had only one crop; rice growing and diversified farmers; some farmers with supplementary incomes and some with only minimum incomes; associations near to and relatively far from markets; and some that had been hit by natural disasters.

In the provinces, the team sometimes divided into two groups to cover more associations. Each group consisted of an agricultural economist, a generalist, and a sociologist supplied by the FSDC headquarters. The teams met at or near the sites with various FSDC staff and the Institutional Officers of the area. The teams visited each village, in most cases inspected the pumps, walked along a portion of the irrigation system, and met with members and officials of the association. Meetings

often took place around the pump site, by the irrigation ditches, under the banana or mango trees, or in the house of one of the farmers. Questions were asked of individual farmers as well as groups. They were often frank, open and spontaneous. Probably, a total of close to 200 farmers participated in the meetings. Some associations knew of our visit in advance. Some did not. Farmers often came out of the fields to sit and talk with the team.

The interviews, with a few exceptions of farmers who spoke English, were conducted in local dialects of Filipino: Tagalog, Pampanga, Ilocano, and Ilongo. It was most fortunate that the Mission made available Mr. Thomas Hobgood, an IDI Agricultural Economist, who accompanied the team. His excellent training in Tagalog greatly facilitated the interview process. He conducted the interview in Tagalog areas, and his knowledge of it created empathy in other areas that could have been achieved in no other way. The team cannot stress too strongly the importance of such training for improved personal relationships.

In each interview the team attempted to find out the following information:

1. Basic Data: size, membership, loan, funding date, tenure status, pump operation.

2. Inputs: Fertilizer use, insecticides, herbicides, electric or diesel usage, types of seeds.

3. Expenses: of farmer to ISA, ISA to FSDC, payments to landlord or amortization, past and present debts, cost of land preparation, transplanting, weeding, harvesting, etc.

4. Production: yields before and after irrigation, machinery used, transportation.

5. Income: price, changes in net income, off-farm employment and income, consumption, use of surplus cash, if any.

6. Attitudes: Perceptions about quality of life and future.

Copies of the Field Notes are available on request.

APPENDIX F

STATISTICAL DATA ON THE SOCIO-ECONOMIC STATUS OF ISA MEMBERS

Statistical Data on the Socio-Economic Status of ISA Members

	Without Irrigation	With Irrigation	With Irrigation & Innovative Packages
Age	47 years	47 years	45 years
Primary Education	73%	65%	70%
Secondary Education	17-18% average		
No Education	9% average		
Share Tenants	46.5%	42.5%	29.6%
(Previous Page Blank	32.7%	32.3%	18.4%
Leasehold Tenants	18.2%	20.5%	39.8%
Household Size	6.0	6.2	7.2
Poverty Threshold	P.9,556.00 (average)		
Farm Income (yr)	P.3,788.00	P.4,180.00	P.6,800.00
Non-farm Income (yr)	2,741.50	1,705.90	1,560.00
Farms above food poverty threshold	48.4%	48.32%	43.9%

Expenditures: Food 54.26%, Education 20.9%, Clothing 9.32%, Rent 8.20%, Health 7.31%

Common diseases: Protein difficiency, ulcers, intestinal parasites, gastro-enteritis, cholera, tuberculosis

Source: FSDC 1979 Reports

Cropping Intensity:	without irrigation	1.3	
	with irrigation	1.6	
Palay yields:	without irrigation	38 cavans (50 kg.)	
(per hectare)	with irrigation	53 " "	
	with irrigation & IP	53 " "	
Fertilizer use	without irrigation:	wet season:	24.5%
		dry "	23%
	with irrigation	wet "	52%
		dry "	55%
	with irrigation & IP	wet "	67%
		dry "	79%
Chemical use			
(insecticides, weedicides			
etc.)	without irrigation	31%	
	with irrigation	57%	
	with irrigation & IP	71%	

Note: There are significant differences in these statistics based on geography. It is not known whether this is a result of natural factors (soils, weather, etc.) or ethnicity or poverty levels. Further the three groups covered are ISA members and, thus, have some potential for irrigation. Thus these data may not represent statistically the Filipino farmer, and may be higher than the average for the country as a whole.