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CAPITAL SAVING TECHNOLOGY TRANSFER AND DISSEMINATION IN EGYPT

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CAPITAL SAVING TECHNOLOGY TRANSFER AND DISSEMINATION PROGRAM IN EGYPT

I. INTRODUCTION

Congress, in recent years, has expressed an interest in technology transfer, in particular the choice of technologies by the U.S. in its international assistance programs. The House Committee on Appropriations has recommended greater emphasis on smaller-scale technologies in tune with local needs, variously referred to as appropriate technologies, light capital technologies, and most recently, as capital saving technologies (CST).

Congress' most recent, and perhaps most direct mandate to AID is expressed in the report of the 1980 Foreign Assistance and Related Programs Appropriations Bill which states, "a central feature of U.S. foreign assistance should be to strengthen the ability of developing countries to adapt, and above all, deliver such technologies to the mass of small farmers and businessmen."

The evolving policy--both in planning and implementation--of the U.S. AID Mission in Egypt is clearly in harmony with this latest Congressional capital saving technology mandate, it appears from our study of AID policy and program documents, from our recent 10-day examination in Egypt of AID/Cairo projects and in our discussions with the Mission Director, Program Directors and Project Managers at the Mission. The CST approach, which seeks to mobilize creative and self-reliant efforts through the introduction of

technologies and mechanisms which can be locally developed, utilized and managed, in fact, already strongly reinforces the current AID "bottom-up" approach which emphasizes project planning specifically targeted to the poor population. It is a deliberate reversal of the "top-down" approach of the past which was based on the assumption that benefits from exclusively large-scale national projects would filter down to the most needy.

This "bottom-up" policy is clearly reflected in the views of the AID Mission Director, Donald Brown, who has a finely-balanced sense of the inter-relationship and interdependence of infrastructure projects with capital saving technology projects, and the necessity of each in AID programs and Egypt's equity-focused development plans. Mr. Brown and his staff have been promoting the concepts of CST by demonstrating to their Egyptian counterparts those areas in development strategy where CST is most appropriate and how it can be utilized. In so doing, particular attention is currently focused on the real costs of the factors of production--labor, capital and resources--in designing AID projects. For example, AID's Rural Health System project has been specifically designed as the best of several alternative approaches which will provide maximum effectiveness at an affordable factor mix for Egypt. Similarly, the final design of the Urban Housing project provides for its specific target population and geographic locations an innovative alternative to the prevalent high-subsidized "five-story walk up" housing approach.

The Mission, however, still faces some constraints in their CST promotion efforts, primarily due to the effect of pervasive government subsidization of essential goods and fixed prices which do not reflect real costs. These will be illustrated later in this report.

Operating in support of the AID policy and in favor of much greater use of CST throughout Egypt is the Government of Egypt's (GOE) recent development decentralization strategy. The move to decentralize represents a major reversal of 25 years of centralized socialistic policies initiated after the 1952 revolution which resulted in the nationalization of major domestic and foreign enterprises and a massive but unsuccessful attempt by the central government to provide for all of the material needs of its people. In reversing the former policy, the GOE is restoring the environment in which traditional Egyptian entrepreneurship and personal inventiveness can resume.

Concentrations of poor in urban areas provides a special challenge to the decentralization program. Despite a vigorous campaign to improve health, education and living conditions throughout Egypt, the migration of rural people to the cities, exacerbated by the wars, has resulted in necessarily focusing much of the national budget on urban concerns. Migration to Cairo is still estimated at 1,000 persons per day and thus mandates countinuing attention, however, efforts to reverse this trend are being mounted by the recently-created Organization for Reconstruction and Development of the Egyptian Villages (ORDEV). ORDEV seeks to improve the quality of rural life by strengthening economic and social control at the local level. An earlier

effort to encourage decentralization and pluralization of economic development, which is playing an even more important role today, is the 1974 "Open Door" policy which provides incentives and increased opportunities for domestic and foreign private enterprises.

Thus, there appears to be a timely convergence of U.S. and Egyptian development policies and strategies providing a natural opportunity for the greater introduction and wider promotion and use of capital saving technology, setting the stage for a significant increase of CST use within the next several years.

Following our identification and review of CST projects supported by the AID Mission in Cairo, are evaluative overviews of (1) CST elements of larger-scale infrastructure projects currently being funded, (2) the state of CST dissemination in Egypt--both hardware (technologies) and software (information)--and (3) some of the major constraints to the introduction of these technologies.

II. REVIEW OF PROJECTS

Our review of the current development projects directly undertaken by AID or AID-supported, reveals that more than a third of the budget and of the Mission's total activities--17 of 51 development projects--incorporate capital saving technology components and/or tools.

Our report describes these under the traditional development categories of rural development, housing, employment generation and finance, food, health, and national planning. The following projects have been selected carefully from the overall AID program because each has some significant CST element or is a CST project in its entirety: Development Decentralization, Basic Village Services, Low Cost Housing and Community Upgrading, Small Scale Enterprise Credit and Advisors, Water Use and Management, Rice Research and Training, Major Cereals Production, Agricultural Mechanization, Poultry Improvement Project, Acquaculture, Small Farmer Production, Cooperative Marketing, Small Scale Agricultural Act, Rural Health Delivery System, Urban Health Delivery System, Family Planning, Applied Science and Technology Research, and private voluntary organizations projects.

Our choice has been guided by the definition of capital saving technology of the House Committee on Appropriations, namely those projects which:

"A. Economize on capital without wasting or displacing labor;

B. Require a small capital investment per worker, on the order of magnitude of the average annual per capita income of people in the area of the project, with variations in this amount where justified by special circumstances;

C. Are modest in scale, simple to install, and durable in operation;

D. Are not dependent on a highly centralized infrastructure for production, maintenance, or repair, and are thus manageable by small entrepeneurs;

"E. Make efficient use of renewable resources and minimize costs by combining factors of production according to their relative prices and scarcities;

F. Meet the needs of local communities and enhance the self-reliance and local control of such communities; and

G. Create a process of capital self-generation and self-liquidation so as not to become continually dependent on outside sources of financing."

Almost all the projects met the following four criteria: responsive to local needs; decentralization, local management and control; efficient use of renewable resources (including human power)/minimizing costs by factor pricing; and economizing capital. In varying degrees they met the remaining criteria, depending upon the individual focus of the project, for example, whether technology-introducing or local capital-generating.

RURAL DEVELOPMENT

AID is directly or indirectly funding two general rural development projects: Development Decentralization and Basic Village Services. Each has the dual purposes of improving the quality of life and increasing control and responsibility at the local level. Both projects explicitly involve extensive CST or open broad new opportunities to further promote and use CST.

Development Decentralization

The Development Decentralization project is the embodiment of the new GOE policy of encouraging local participation, an essential CST element, in the creation of village enterprises.* Working through the nearly 800 local village councils, community members submit proposals with loan applications for local profit-making enterprises based on community needs and strengths to the Organization for Reconstruction and Development of Egyptian Villages (ORDEV). Following ORDEV approval, the projects are organized, managed and operated by community residents themselves, thus providing not only for local needs, but the opportunity for strengthening economic democracy.

AID's participation in this national project includes providing capital funding for loans through a Local Development Fund to approximately 550 rural villages, and technical training in management and administration for government and village officials. To ensure that the financing is ultimately self-generating and self-liquidating, the profit generated from these local projects after loan payments are met (at six percent interest over a seven year maximum period), will remain in the villages to fund further community income-producing projects. At present, over 150 proposals have been submitted to ORDEV; the first 39 projects were approved mid-February 1980. The approved first-round projects include poultry-raising, cattle-feeding, small-scale food processing plants and local transportation between and within villages.

*See Appendix A for the Egyptian project strategy which includes a discussion of the local government structure.

While the first round of projects will be village council-owned, it is expected that second and third-generation projects will include the development of local credit institutions using project profits to improve financial access to villagers, and joint-capital projects between the council and other local private enterprises. AID's planned financial contribution to this project will be $11.2 million.

Basic Village Services

The second project, Basic Village Services (BVS), is complementary to the Title III Basic Village Services program of P.L. 480, which provides funding through Egyptian loan forgiveness for projects undertaken at the local level to provide potable water, sanitation, sewerage and solid waste disposal facilities to rural areas. As with the Development Decentralization project, this AID project will provide technical assistance, training and funding to the local village councils, the focal points for development of these community efforts, thus promoting self-sufficiency and local control essential for expansion of CST. AID's Basic Village Services project and the Title III BVS program, unlike Development Decentralization, are public service sector projects rather than profit-making, goods-producing enterprises. Both emphasize the use of locally-manufactured materials and available labor where possible. As public sector projects, the rate of return and cost/benefit analyses, at least theoretically, can be estimated. Total project costs for the BVS project, including a sector analysis of present village services, participation training, and minor equipment will be approximately $60 million.

Low Cost Housing and Community Upgrading

Egypt's urgent need for housing coupled with its decentralization commitment has provided the impetus for a new kind of housing project which incorporates several CST elements: community development and participation, individual initiative and small private enterprise expansion.

Urban growth in Egypt is estimated at four percent annually, compared to 2.5 percent for the country as a whole. Present housing needs have been estimated at 1.5 million units and are expected to double over the next ten years.

Housing is generally provided by three distinct suppliers: the government, government-approved private sector construction companies, and informal, non-government-approved private companies. The GOE response to low-income housing needs has been the construction of five-story walk-up public housing apartments with heavily subsidized rents and minimal attention to social services such as schools, health facilities, etc. Government-approved private sector housing projects, influenced by the government's long-standing rent control policy, have primarily centered around construction of higher rent-generating luxury apartments. Informal private enterprise-constructed housing, built without government authorization, is generally sub-standard, and lacks water, sewage, and electricity; however, it is estimated that between 50 to 70 percent of all housing in Cairo is constructed by this informal, non-regulated

sector. In addition, poor construction practices and the uncertain quality of black market materials (e.g., cement and steel) have resulted in 12,000 units collapsing annually in Cairo alone.

The Low Cost Housing and Community Upgrading project demonstrates how to change this situation by constructing a new model community for 7,200 low income families in Helwan, and industrial suburb of Cairo, and by expanding and improving existing housing for 12,500 families in six of the poorest neighborhoods of Cairo and Helwan.

The objectives of the program are to provide adequate housing for low-income families while reducing the expense of government subsidies by providing a finance system with rationalized interest and mobilizing private savings for private sector investment. Private sector participation will be encouraged in all aspects.

The new housing project component utilizes "cluster site" planning concepts in which basic services such as water, sewage and electricity will be installed as or before shelters are constructed. Five dwelling designs, ranging from a $2,727 four-square meter sanitary core to a $4,498 30-square meter three-room dwelling, will be available for individual or cooperative purchase. A built-in credit facility will offer graduated payment mortgages so that low-income owners can add to the core unit quickly within accepted designs thus meeting CST criteria.

While initial site preparation and construction will be performed by an AID-GOE contractor, housing improvements beyond the initial unit construction will be negotiated by individual owners who may employ small private contractors.

AID will provide funding to build schools and health/community centers for the neighborhood, which will be maintained by the community resident management organizations.

The community upgrading component of the project is designed to provide the opportunity for home and community improvements to residents of six of Cairo's informal housing communities which generally lack social and health facilities. Home improvement financing will be made available to residents to personally upgrade or employ small-scale construction enterprises. It is expected that in either case a minimal degree of mechanical aids will be used.

From a CST perspective, the underlying focus of the upgrading project component is to identify and organize community leaders from these areas to mobilize community support for improving environmental sanitation and maintenance. As an added incentive, as with the new community component, AID funds will be used to build schools, health and community centers for these six communities.

Beyond improving the quality and quantity of housing for low-income workers, however, this project provides the opportunity for the poor to assume responsibility for upgrading and maintaining their own communities

through interaction and credit assistance at rates they can afford, but which will not present a continued drain on GOE resources. Total project costs will be $50 million.

URBAN EMPLOYMENT GENERATION AND FINANCE

Small Scale Enterprise Credit and Advisors

The GOE's 1974 Economic Open Door Policy, which encourages private sector development and foreign investment in Egypt, has resulted in a 20 percent higher growth rate in the private sector than in the public sector, although the public sector corporations currently account for 80 percent of industrial output. Despite the recent attention to private sector development, private sector assistance, including a $32 million AID loan to the Development Industrial Bank, has not filtered down to the small-scale enterprises (50 employees or less) which comprise over half of the private sector workforce or 370,000 out of an estimated 623,000 industrial workers.

AID's Small Scale Enterprise Credit and Advisors Project offers a promising small-business CST approch. The project, in its earliest stages of design, will address the most common barriers restricting small scale private sector growth: the lack of financial resources, poor organization and management, lack of information on production techniques, poor service and marketing advice, and outmoded, inefficient and, in some cases, inappropriate machinery. It will establish credit facilities and improve the

quality and quantity of technical advice available to small scale enterprises and, to this extent, can serve as a model for smiliar CST industry projects.

The project's target group is the small scale enterprise group employing between 10 to 49 employees, which represents approximately 19 percent of the "under 50 employees" sector. The remaining 81 percent of this sector is comprised of the artisan category, defined as 1-9 employees shops. It is important to note here that enterprises are categorized according to the number of employees, not by product differentiation. Small-scale industries are generally associated with the production of consumer goods, and both the artisan and "10-49" employees enterprises are involved in the production of garments, woodworking and furniture, food processing, engineering, textiles, shoes, leather products and repair services.

The 10-49 employees group was chosen for this project because it seemed to be more of a critical mass and represented a smaller, more manageable portion of this employment sector, and because AID project managers expect that,from a CST point of view,much of what is learned in this initial effort will be applicable to the artisan group targeted for later projects.

The SSECA project, working with the General Organization for Industries in the Egyptian Ministry of Industry, will establish credit facilities, a key CST element. These will take into account the constraints on credit available to smaller-scale enterprises including high collateral requirements, lack of sufficient working capital and fixed assets, the general unwillingness

of banks to arrange the projected small loan sizes and insufficient margins. AID will also improve the quality of technical advisors in Egyptian industrial service organizations responsible for providing assistance to small scale enterprises, and the channels of communication between such advisory organizations and the small scale enterprises themselves as a stimulus to CST.

Finally, the project design calls for a Technology Demonstration Center in Cairo, which will promote the use of appropriate new (in some cases used) American technologies which can be employed to improve productivity and product quality, thus resulting in a significant increase in the importation of capital saving technology.

This project is still in the early design state. The funding level has not yet been determined.

FOOD

AID is presently funding the following nine agricultural projects which include capital saving technology strategies. They economize on capital while enhancing rural incomes; introduce technologies that are modest in scale; make efficient use of labor and natural resources, and meet the needs of local communities, etc.

Water Use and Management

Since the completion of the Aswan High Dam in the 1960's, Egyptian agriculture has been transformed from a one-crop per season flood-irrigated system, to one producing 2.3 crops per year assisted by one of the most

intricate irrigation systems, resulting in one of the world's highest cropping intensities. Irrigation from the Nile system annually supplies approximately 45,000 cubic meters of water per feddan* of cultivated land. The increase in water availability, however,** coupled with poor land management and water misuse, is causing serious problems of rising water tables, waterlogging and increased surface salinity.

The Water Use and Management project is designed to arrest and reverse land deterioration by introducing simple land and water management practices to small farmers. The project has been in operation for 18 months in three pilot areas chosen for their different soil, crop and farm-size variations. Basic data collection on existing farm production, and quality and quantity of water use, has been completed. The project team is presently performing on-farm research to improve water application procedures. Rural extension services will be strengthened to introduce the improved management techniques to local farmers and promote dialog between farmers and water use specialists. The result of this project will be the economizing of farm production inputs while increasing employment and maintaining soil quality.

It is estimated that Egyptian farmers could decrease water use by up to 50 percent with improved techniques for land leveling and water management. A total of $7 million has been granted for this project.

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*One acre = 1.038 feddans

**Egyptians do not pay for irrigation water.

Rice Research and Training

This project aims at improving Egyptian rice production on small-scale farms. Rice is presently the third largest cereal crop, at approximately 200,000 feddans planted annually. In addition to developing a research center to study varietal improvements, soil and water management, pest control practices, seed production and milling processing improvements in one of the major rice producing governorates, the project includes the organization of extension services to farmers to facilitate two-way communication between the growers and rice production researchers.

Farm extension activities will not only study the grower's production practices and suggest modifications based on findings of research, but will also aim at facilitating the rapid flow of field problems from the farmers to the researchers. Based on the Center's research activities and interaction with farmers, appropriate levels and types of farm mechanization designed, adapted and manufactured locally, will be identified and made available for village farmers to purchase cooperatively, thus improving local self-reliance and control. The project will also address the problem of inadequate and often late supply deliveries of rice seeds to the farmers by establishing a seed processing center closer to the major rice-producing governorates.

The Rice Research Advisory Council, established at the ministerial level, will also be assisted in coordinating its activities with major American institutions and the International Rice Research Institute in the Philippines. Progress in this project has been delayed due to Egyptian ministerial changes,

however, a contractor has been chosen and activities are expected to begin soon. A total of $11.4 million has been granted for this project, which has the potential of becoming a model CST project.

Major Cereals Production

Similar in project design, the Major Cereals Production project will also increase production of other cereals on small farms. It will be funded at $30 million dollars. Other major cereals include wheat, corn, and sorghum.

Agricultural Mechanization

The Agricultural Mechanization project is designed to meet the problems of agricultural labor shortages by introducing small-scale capital saving technologies which are responsive to Egyptian agricultural conditions.

It has been estimated that the percentage of presently arable land for agriculture compared with Egypt's total land mass is less than three percent, or approximately one million feddans. Generally, the level of mechanization of the agricultural sector is very low: many commonly used technologies such as the ox-drawn plow, sickle, flail, and threshing under animal hooves, go back thousands of years. Over 400,000 animal-drawn Persian wheel water-lifting devices are presently used; Archimedian screws, another ancient water-lifting technology, number 100,000. Although the number of tractors increased eight percent annually from 1973 to 1978, present research indicates that the approximately 17,000 tractors operable in 1978 could cover only one-fourth of the total cultivated land.

Despite a general labor surplus in Egypt, labor shortages, especially at harvest and new crop preparation periods, exist. Unskilled rural money wages have risen from 40 cents per day in 1973 to $1.28 per day in 1978. Although real wages have increased 73 percent, and at peak harvest may rise five times as much, available labor is still inadequate.

The effects of the labor shortage on agricultural production are devastating: planting delays due to use of labor for threshing and winnowing harvests generally results in a 20 percent decrease in total potential production; each day's delay in corn planting results in a one percent loss in corn harvest potential. Such production losses, when combined with other causes of insufficient supply, necessitate importation of several million tons of grain annually.

In light of these serious considerations, AID, in cooperation with the Ministry of Agriculture, has recently announced its intention to undertake the Agricultural Mechanization project which will implement select mechanization activities to increase the productivity of this already labor-intensive sector and create a sound planning, implementation and support base for future mechanization programs. This program will create an environment in which CST can develop, in particular addressing the need for financing local enterpreneurship. Increased, yet wisely planned, mechanization should also reduce the dependence on child labor, thus promoting rural education and lowering rural fertility.

The six major components of the project are: (1) planning and evaluation to determine the most appropriate types of mechanization needed; (2) soil improvement which will provide subsoiling, drainage and land-leveling services to improve water-lifting and utilization; (3) the creation of a credit fund to assist local entrepreneurs and shop owners in opening 20 small service centers for currently inoperable machinery and training for these service center workers; (4) creation of a Farm Mechanization Research and Development Center to perform research and provide grant funding to other Egyptian institutions and businesses to develop appropriately-sized equipment based on Egyptian conditions; (5) creation of a farm machinery extension program which will emphasize tillage and seedbed preparation, farm operation, maintenance and repair of equipment, water-lifting machinery and implement selection, assistance to small manufacturers and cost and return evaluation; and (6) in-country and external training in mechanization for a training support group.

The kinds of mechanization which will be introduced include smaller scale threshers, disc harrows and row planters, several of which ultimately will be manufactured locally. The Egyptian Agricultural Bank will provide credit mechanisms especially for cooperative purchases of water-lifting equipment.

This project, presently at the pre-contract stage, will be funded at the level of $40 million, and could also become a model for agricultural CST.

Poultry Improvement Project

The aim of this three year project is to increase Egyptian poultry and egg production to approximately 1.5 billion eggs and 600 million broilers annually by 1987 by analyzing the poultry sector and developing better methods of raising poultry.

While the project is still in its early stages, the team has completed the sector analysis and is presently involved in improving three Ministry of Agriculture Poultry Company breeding/hatching farms, the major source of day-old chicks and fertile eggs to the rural producers who are already supplying approximately 80 percent of all poultry meat and 97 percent of the eggs. The project also develops the means for increasing the availability of pharmaceuticals, including vaccines and feed additives, and other services to the poultry producing sector. This local, small producer activity will be significantly bolstered by improving the source of their poultry inputs, the Poultry Company, using AID consultant and training services. The Ministry of Agriculture's Poultry Company is also the largest single producer of eggs and poultry meat. Improving domestic poultry production will result in reduced poultry imports, thus saving foreign exchange.

The project will cost an estimated $5 million.

Acquaculture

A project which has the potential for significantly increasing CST concepts of local control, production and income generation is the recently designed acquaculture project.

This $27.5 million project has as its goal an increase in fish production of 4,000 tons per year by 1986, primarily by improving acquaculture practices of village farms and expanding local private enterprise and cooperative fish farms. This goal will be accomplished partially by establishing a National Fish Farming Center at Abbasa on a 200 feddan site responsible for research and extension to local production farms, and a carp hatchery and mullet fry nursery. The center will conduct applied research to develop optimal practices for fish farming operations in Egypt. It will pay particular attention to the needs of fish farms and mixed poultry/fish operations at the village level.

The project will set aside 5,000 feddans for private sector production farms in two governorates. These farms will be financed through a revolving credit fund to be established within the Agricultural Credit Bank. The fund will make 15-year loans to fish farmers--both individuals and cooperatives--at a standard rate of interest. The loans will cover the cost of pond construction, equipment and all operating expenses for the first two years of operation of each farm. During the first phase, 800 to 1,200 feddans will be developed for farms and be distributed to approximately 80 recent agricultural graduates as homesteaders. During the second phase of production farm development, another 3,800 feddans will be prepared, so that at project's end the distribution should be 60 homestead farms, 70 village cooperative farms, 30 mixed fish/poultry farms managed by women's cooperatives and 20 medium-sized private enterprise fish farms.

The project will also provide for the improvement of the natural carp hatchery at Serow to raise annual production from 1.5 million carp fry to 10-17 million per year; the construction of two mullet collection stations along the Mediterranean coast; a mullet hatchery; and a modern fish market in the town of Zagazig which will be rented by the government to local entrepreneurs to improve marketing opportunities for these small producers. To keep the above CST project in harmony with current scientific advances, approximately 75 individuals will be given training in fisheries management, fish pathology, engineering, food technology and fisheries biology in the U.S. and other third countries.

Small Farmer Production

By drawing on the concepts of CST, this project will help solve two of the most onerous problems facing small farmers: the inaccessibility of credit and delayed and inadequate amounts of farm inputs such as fertilizers and seeds. Beginning at the local branches of the Agricultural Credit Bank located in nine village satellites of eight larger villages, the project will ultimately focus on six main components: bank administration and management, medium- and short-term lending, farm management support, storage and handling of inputs, and training. The bank administration and management component will seek to improve local capabilities and upgrade facilities and equipment, as well as improve public awareness of the bank's services. Participating banks will be reorganized as profit-making centers with greater authority to the village bank manager, allowing him to be more responsive to local needs. Medium- and short-term loans

will be available to farmers at at least 10 percent interest based on need and ability to repay, rather than collateral. Procedures will also be modified so that farmers will have to return to the bank less frequently.

Greater access to credit (at approximately eight percent interest) plus increased extension assistance will be provided to chosen groups of "cooperating farmers" (25 farmers in each village) in return for serving as demonstration farmers, assisting in the formation of additional cooperating farmer groups and providing farm management information. To be eligible cooperating farmers may hold only five feddans of land or less. The "cooperating farmers" approach is necessary to overcome traditional reluctance to experiment with new agricultural practices or inputs. As 83 percent of all rural land holdings are of less than one feddan of land, and 45 percent of the total arable land is fragmented into holdings divided into four or more parts, it is readily understandable that farmers are unwilling to risk even a small portion of their land to new techniques.

These cooperating farmers will be assisted in increasing output through the use of higher input levels, improved seed and other capital saving technology adaptations.

Agricultural extension services, generally associated with the village banks, will be improved by establishing training farm management teams composed of the local bank manager, cooperative agriculturalist, and local extension agent. Initially these teams will focus their activities on cooperating farmer groups.

Several other local initiative activities will be undertaken to upgrade storage and handling of farm inputs. Control flow procedures will be streamlined to reduce delay. Extension agency facilities will be upgraded or constructed. Some will be constructed for and owned by the banks, others will be constructed by the local private sector with special funding and rented to the bank. Local transportation capacities for delivery of input goods to the agencies will be upgraded by establishing a local fund to finance the purchase of tractor/trailer units by local farmer groups or entrepreneurs.

Training of the Central Agricultural Credit Bank personnel in Cairo to assist in the success of this rural project will also be sponsored.

A total of $25 million has been approved for this project.

Cooperative Marketing

The primary purpose of this CST project will be to increase the productivity of self-reliant locally-controlled private agricultural marketing cooperatives. Project efforts will address five general problem areas: the quality of fruits and vegetables, the loss of perishables from producers to consumers, service gaps of cooperatives in meeting the needs of farmer-members, insufficient cooperative capital resources and salary levels, and in adequate physical facilities and management expertise.

The project centers around four fruit and vegetable marketing societies which have formed a cooperative to concentrate capital formation at the local level. To supplement the cooperative's combined resources, the World Bank is

providing loan capital to purchase agricultural inputs to stimulate a fruit and vegetable production increase of 30 percent.

Improving the cooperative marketing system will not only provide the necessary assurances to producers of an accessible marketing outlet to stimulate higher output levels, but will ensure that products will reach consumers at fair prices with a minimum of deterioration and spoilage. It will also provide an opportunity for private sector expansion and increased export potential.

AID will primarily be responsible for technical assistance to train cooperative personnel in management, sales, transportation, produce grading and other administrative procedures. The International Bank for Reconstruction and Development is providing transport vehicles as well as a loan to finance the purchase and construction of cooperative equipment and facilities. Five million dollars has been allocated for this project.

Small Scale Agricultural Activities

This three-year project is unique in that it sets up a working group to promote appropriate, capital saving technologies in response to periodic local requests. It has three major objectives: (1) to introduce, adapt and extend technologies appropriate to rural resident needs; (2) to begin the process of developing a host country institutional capability in capital saving technology development and extension; and (3) to increase rural employment opportunities by expanding the activities of small scale rural-based agribusiness enterprises.

The project strategy maximizes involvement of rural resident users and producers of technology in the identification of technologically-solvable problems and appropriate solutions, in the fabrication of equipment, and in technology diffusion.

Responsibilities for the project rest with an Appropriate Technology Task Force (ATTF) comprised of agricultural production, extension and financial/economic specialists from the Ministry of Agriculture. A technical committee comprised of the ATTF Chairman, a Ministry of Agriculture official and AID technician selects problems for action and is empowered to make small grants to local small manufacturers to develop the small-scale technologies adapted during the project.

The ATTF will also be responsible for improving dissemination of information on small-scale technologies developed during the project through program demonstrations and Arabic instructional materials.

The unique nature of this project, in which activities have not been pre-determined but rather depend on rural populace requests is shown in the following example:

The technical committee recently received a request for assistance from a private voluntary organization which had started a beekeeping project in Upper Egypt to improve the quality of hives.* The AID technician, himself a

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*See Catholic Relief Service Project mentioned later in this report.

beekeeper, made an on-site visit to the rural community. After consulting with the PVO and community residents, he designed a better, still inexpensive hive using a small one-horsepower bench saw (which he had developed previously). The hive, instructions for building it and the saw were given to the community. A local manufacturer purchased the saw (and design instructions) on credit which he will repay by making and selling the hives for the beekeeping project. He will also be able to manufacture duplicate saws for sale or to expand his new business.

Several such sub-projects are expected to be initiated throughout the course of this project. A total of $1.7 million has been granted for this project.

HEALTH

Rural Health Delivery System

This project embodies some of the best aspects of CST concepts, providing low-cost rural health services in response to local needs by drawing upon the traditional village health providers (midwives and barbers), involving village participation in a dynamic health service system and using simple basic medical equipment.

The basic unit of the rural health delivery team includes the doctor, nurse, technician and sanitarian, each of whom is responsible for specific tasks within the system but whose work is in large part integrated with that

of the other members. To combat low motivation of traditional rural health providers and improve team productivity, the project includes a built-in incentive system which allows small monetary rewards, awards, further training, and opportunities for advancement for particularly productive members.

Staff of the 10 health care clinics, currently operational in 10 rural districts have already completed health charts on village families and the beginnings of an outreach program. Respected village families and traditional community health providers are being encouraged to organize village development committees to identify health needs and evaluate facilities as well as to mobilize wider community participation for environmental and sanitary improvement activities, clinic restoration, and assistance to poorer village residents. These activites are designed to encourage local participation and involvement, both of which are essential for this CST health project to succeed.

While the main foci at these rural development clinics are gastrointestinal disorders and respiratory infection, other minor curative interventions will be also provided although treatment is only part of the clinic's role. Major emphasis will be placed on community outreach and education for family planning, child health care and preventive health care. Basic medical equipment will be available in rural clinics, while more intermediate level technologies will be housed in one regional facility for shared use by other area clinics.

Formal training in rural public health will be provided to clinic team personnel--including midwives--primarily in Egypt and to a much lesser extent in the U.S. and third countries. In addition, local training in repair and

maintenance will be given for the rural ambulances and health education vehicles which are being purchased through AID's grant. Total project cost is estimated at $7.8 million.

Urban Health Delivery System

This project is designed to improve the delivery of non-high technology urban health services, particularly in areas of maternal-child health, family planning, preventive health and nutritional education. The expansion of clinical care facilities is designed to reduce the overuse and crowding of major hospitals, improve the quality of and accessibility to personally-directed care, and stimulate the delivery of home and neighborhood health delivery primarily in low-income areas of Cairo. By reducing dependence on major hospitals, the project will economize on scarce health resources, while delivering better low-cost preventive care closer to patients.

The project began with a broad health sector assessment which included baseline status data. In addition, it explored both the needs for health services perceived by the potential consumers, and the various biases and practices which typify prevailing health care attitudes. This information is being used to design the neighborhood clinics according to the needs and demands of the low-income consumers, thereby providing a strong element of local direction in the kinds of services which are offered. Community participation and involvement will also be stressed in the improvement of environmental sanitation and home care training techniques.

The health clinics will maintain cooperative links to both Cairo University and the Ministry of Health.

This $25.3 million project will also fund technical training and skill upgrading for nurses, technicians and sanitarians as well as selected para-professionals. Twenty-four urban clinics are presently being renovated or constructed in the target neighborhoods to improve access to and encourage use of these health facilities by the low-income beneficiaries.

Family Planning

The AID family planning project, which has been built around a CST community-participation framework and use of appropriate basic health technologies, is only one of a number of such activities currently in operation in Egypt to reduce the country's 2.5 percent population growth rate. If left unchecked, Egypt's 40 million population, 96 percent of which is crowded on only four percent of the land, would double in 28 years.

The AID project, now in its third year, has focused on expanding the integrated village social service delivery systems in Menoufia governorate located in the central delta region, by providing training not only to medical, but also paramedical providers (midwives) and elder leaders in over 100 villages. Mobilizing the efforts of local midwives and other respected leaders has had the dual purpose of encouraging their support and approval, essential for gaining village participation and acceptance, as well as promoting the necessary skills-upgrading of these traditional village health providers.

Easy to operate, simple hand-wound cassette film viewers designed for individual use have been widely distributed to staff in village centers to augment regular training. These are used to illustrate performance of pap smear tests, insertion of IUD's, treatment of oral rehydration and childbirth delivery. These imported, soundless, self-contained film units, which can be wound forward, stopped and rewound without damage to the film, have been found very practical. A national family planning campaign will be launched in the near future using a mixture of various technical levels of information, education and communications technologies.

Other elements of the project include improved training for medical school graduates in basic family planning and maternal/child health care techniques and the provision of basic equipment and supplies to the village centers. A total of $23.5 million is planned for this project.

NATIONAL PLANNING

To strengthen the capabilities of Egyptian research and planning for national economic and social development, AID is providing support for the Egyptian Academy of Scientific Research and the National Research Center through its Applied Science and Technology project.

Applied Science and Technology

Under this project, the U.S. National Academy of Science is providing technical assistance and training to the Egyptian Academy of Scientific Research and the National Research Center to upgrade skills and assist the

scientific community in directing its energies toward the development of applied technologies to solve practical economic and social development problems in the following areas: food and agriculture, construction, and housing, industry and mining, health, transportation and commerce and energy. An interest in capital saving technology solutions has been exhibited in some of the work already in progress.

Work thus far has included designing and testing a biogas digester which can be fabricated and used at the village level, and, under the "More and Better Food" sub-project, working with the Egyptian industrial sector to improve the quality and nutrition of food including infant formulas and cheese. The aim of this project is not only to strengthen and direct applied research capabilities, but also to improve communications and cooperation between the scientific community and large and small scale enterprises in meeting Egypt's development needs. In this sense, the project can directly impact the success of the development decentralization and private enterprise policies.

The project cost is $8.1 million.

AID-SUPPORTED PRIVATE VOLUNTARY ORGANIZATIONS

In addition to AID's direct involvement in CST development projects, the Mission provides limited financial support for capital saving technology projects designed and carried out by two major private voluntary organizations in Egypt: the Catholic Relief Services (CRS) and CARE of Egypt.

Catholic Relief Services

CRS, working in Upper Egypt, has received AID support for two current projects: a beekeeping project, and a small scale agricultural mechanization project, both of which primarily focus on promoting self-reliance and increased productivity to raise income for the Upper Egyptian rural population.

The beekeeping project, supported by a $100,000 AID revolving-fund grant, is expected to expand ultimately to a local credit facility, ten times the initial grant size. Under this project, 300 hives were purchased and soft credit loans were provided for small farmers to purchase seven hives each. The expected return from the first year's beekeeping was one kilogram of honey, some of which could be sold to repay part of the loan. It was expected that in the second year, beekeepers would not only produce larger amounts of honey, but would also double the number of hives as the bees swarmed. The actual first year results were 10 kilos of honey plus swarming for new hives! The secondary income impacts of raising bees has been a 20 percent increase in total productivity of other crops, due to bee polinization.

Furthermore, in keeping with the CST philosophy, future hives and tools used to make the hives, will be constructed locally through the AID Small Scale Agriculture Activities project noted earlier in this report.

A second AID-supported CRS project has assisted in the design and promotion of a small-scale 10-horsepowered multi-cropper thresher/winnower which addresses the severe problem of peak season labor shortages and planting delays which can result in significant production losses. The thresher/winnower

was developed by CRS and the Ford Foundation; an AID-supported revolving credit fund loan has permitted farmers to purchase this small-scale agricultural machine, repaying the loan by contracting work with other village farmers. The mechanism is so effective that in a 45-day sorghum harvest season, the owner can earn over LE 2000 ($2,800) gross, pay his expenses, cover an installment payment and still save LE 1400 ($2,000) at the end of the season. The engine can also be adapted to a small-scale centrifigual pump for irrigation. (For a further discussion of the multi-crop thresher/winnower, see Appendix B).

CARE of Egypt

CARE of Egypt has received approximately $100,000 from AID towards funding of a Basic Service Project to provide shelters and community facilities for approximately 7,000 fishermen on the High Dam Lake. This project, outlined more completely in the same Appendix, includes four components: the self-help construction of secure shelters; shoreline and settlement tree-planting, and encouragement of small-scale kitchen garden activities; the upgrading and extension of a basic health care delivery system; and capital saving technology experimentation for cooking, agriculture, water-lifting and waste disposal. The latter has resulted in the development of two prototype solar ovens and experimental passive solar energy building.

III. CST INTERRELATIONSHIP WITH LARGE SCALE PROJECTS

A review of the total AID program for Egypt reveals that approximately 30 large-scale infrastructure type projects are currently underway in the country. These projects range from traditional infrastructure development,

e.g., modernization of urban sewage and water systems, power production and telecommunications, to large-scale industrial plant construction, e.g., textile, cement, and salt refinery plants. These projects are included briefly in this report because while essential in their own right they contribute to the advancement of CST in several respects.

The need for infrastructural development in Egypt is great. Only 40 percent of the general population has access to electricity (in rural areas this figure is 20 percent), and an estimated one-third of the total population is without access to safe water. Furthermore, serious capacity limitations in port and storage facilities, railways, telecommunications, construction materials, and power distribution, adversely impact both urban and rural populations as well as both small and large-scale enterprises.

The cement plant construction projects in Suez and Quattimiya serve to illustrate this point. It has been suggested that it is possible to forecast the growth of economic development in a developing country using the level of cement production as the sole indicator. Despite this seeming over-simplicity, it is not uncommon for private sector construction firms in Egypt to wait two years or more for the delivery of cement. This delay retards the growth and employment of the construction industry, which is labor-intensive in Egypt. The cement shortage has moreover been directly responsible for the creation of a vast black market demand for cement, which is often of poor quality yet costs 400 percent more than legally produced cement. Hampered growth in the construction industry also reduces employment and private

enterprise growth opportunities for spin-off and support industries which may be labor-intensive as well.

Similarly, inadequate electricity, water and sewage facilities negatively impact upon the health of the population and impede the development of many small scale CST businesses. It should be pointed out that the water and sewage projects underway are targeted at bringing these essential services of potable water and sanitary facilities to the poorest areas of Cairo, Alexandria and the war-torn cities along the Suez Canal. Furthermore, these urban service projects are balanced by the rurally-focused Basic Village Services project, which is supporting similar development activities in an effort to reduce urban migration. Finally, these essential service projects are inherently employment-generating to a major extent.

Accordingly, the AID Mission program in Cairo has attempted to achieve a balanced mixture of large and small scale efforts to promote economic and social equity development in Egypt. A review of the Mission's activities since its re-opening in 1975 shows a clear move away from its earlier nearly total concentration on large-scale development towards the more recent introduction of more small-scale CST projects. However, Mission Director Donald Brown reports that short-term planning cannot support a full swing of the pendulum to the small-scale side.

The need for well-designed and implemented large-scale projects will remain--although perhaps to a lesser extent than before. They will continue to be addressed not only in the context of improving the quality of life for

the target populations, but also in the context of creating the necessary materials and environment in which decentralization and CST strategy efforts can succeed. Thus these large-scale projects will strengthen communities and basic services, so necessary for the blossoming of entrepreneural capital saving technology enterprises. Director Brown's clear commitment to the capital saving technology strategy is founded on this necessary interrelationship of CST with infrastructural large and small scale development, which he views as being clearly mutually reinforcing.

IV. DISSEMINATION OF CAPITAL SAVING TECHNOLOGY AND INFORMATION

The present focus of AID's CST strategy clearly is producing a healthy stimulus to the "demand side" of the quation, i.e., creating the environment in which capital saving technologies are can be successfully introduced. We believe, however, the supply side--diffusion of the "hardware" (technologies) and "software" (information)--will soon need greater attention as demand grows.

At present, dissemination of hardware is mainly achieved through PVO's, most intimately involved in working directly with poor communities. As indicated, AID provides direct support for some PVO projects.

Because of the relatively early stages of implementation and pilot-project nature of most AID projects, only limited amounts of hardware are presently being imported or locally manufactured. The vast majority of these projects, however, include provisions for strengthening existing Egyptian hard-

ware and software dissemination mechanisms, such as extension services, technical assistance advisory services, coops, and various local marketing mechanisms. In addition to strengthening these groups, AID has built into its projects the opportunity for local small scale manufacturers to duplicate prototype technologies developed through its projects, hence strengthening spin-off local manufacturing capabilities. The dissemination of technologies by local manufacturers is necessarily slower than mass distribution, but is consistent with the overall development strategy and enhances the likelihood of local adoption of these new technologies. Finally, these projects consciously address the issue of the inability of small producers to produce new hardware by providing accessible credit facilities.

There is no clearly established CST institutional network or central clearinghouse for dissemination of CST information. The Egyptian National Information Documentation Center maintains a deposit account with the International Technical Information Network of the U.S. National Technical Information Service which makes small-scale technology information available to developing countries, although further expansion has been temporarily hindered by assistance funding complexities. Informal linkages with international appropriate technology organizations, such as Volunteers in Technical Assistance (VITA), do exist in some cases, mostly through PVO's. These could be strengthened for greater effectiveness and clearer cooperation with other international efforts. The creation of the Appropriate Technology Task Force within the Ministry of Agriculture for the Small Scale Agricultural Activities project, responsible

for disseminating software as well as hardware on a wider scale could be a significant step in this direction.

The National Science Foundation, under contract with AID and working with the Egyptian Central Agency for Public Mobilization and Statistics (CAMPAS), is in the design phase of improving Egyptian capabilities in the area of scientific and technical information collection and dissemination by establishing a national network. During this phase, a national survey of scientific and technical information needs is being conducted. Although it is too early to foresee the results of this survey, CST dissemination can be expected to be included, based on mounting Egyptian interests in capital saving technologies.

The second stage, expected to be completed by the mid 1980's will be the creation of this national network. Although initially taking a high technology route, this project could be useful in providing a means for rapidly disseminating CST information from the research and experimental centers to technology user centers throughout the country. The information system's computerized capabilities would also allow the system to tap into and store information from larger international appropriate technology networks.

Paralleling the developing of this national information system, the Catholic University in Washington, D.C. has been contracted to train information workers in the science of storage, retrieval, processing and dissemination of information to ensure adequate manpower for operation of the scientific

and technical information network when it becomes operational.

Combining these information processing projects with the strengthening of rural information centers--traditionally agricultural extension services--the new role of the village councils, the high priority which the GOE has placed on decentralization and capital saving technology could begin to bear fruit in the coming few years. Whether systems noted herein and others are developed to their full CST dissemination capacity, however, will be heavily dependent on the direction, monitoring and project coordination efforts of the AID Mission.

V. CONSTRAINTS TO USE OF CST'S

Although the AID Mission has made commendable strides in advancing the concepts of CST, it still faces serious problems, namely, the constraints of pervasive Egyptian economic subsidy and price fixing policies which necessarily distort true production factor costs of housing, energy, food, textiles, public transportation, and primarily agricultural inputs (e.g., fertilizers, pesticides) Direct commodity subsidies, which averaged about 25 cents per person in 1960, and just over 50 cents per person in 1970, rose dramatically to approximately $20 per person in 1975 and are expected to average nearly $30 per person this year, accounting for approximately 11 percent of Egypt's GNP.

The subsidy of butane gase, for example, used extensively for cooking and water heating, creates a reluctance among Egyptians to consider simple solar water heating technologies which, after the initial expense of installation and perhaps intermittent minor repairs, would provide virtually free hot water. Subsidies on public sector-produced commodities also put private sector entrepreneurs at a distinct competitive disadvantage.

Similarly, fixed prices which do not reflect the true costs of production, particularly for agricultural commodities, reduce incentives for farmers to invest in even inexpensive technology changes to increase output.

Well aware of the problems created by these built-in constraints, the government of Egypt is attempting to reduce subsidies and raise commodity prices to reflect true production costs. Industrial output subject to subsidized price controls equalled 50 percent of total production in 1975. It has been reduced to approximately 35 percent in 1978. Similar subsidy reductions and price increases are being initiated or discussed in agricultural sectors, although the total process must be prudent and measured.

Paralleling economic changes proposed or being undertaken is a re-orientation of societal expectations away from government support to local self-sufficiency and self-reliance. A second form of re-orientation is the promotion of locally-produced consumer goods to reduce the growing dependence upon, and preference for, imported products. This strategy will have the dual benefits of increasing local manufacturing enterprises while reducing unfavorable balance of payment conditions. As with all social transformations, this process also will be cautious and slow.

However, the Egyptian and AID decentralization strategies as major influences in this societal re-orientation, are indications that events are moving in this direction at present.

Further constraints to the more rapid utilization of capital saving technology in Egypt are in the AID system itself. Despite the fact that Egypt hosts the largest AID Mission, budget and staff limitations reduce the opportunities for personal interaction with project beneficiaries, relegating staff personnel to contract oversight managers. Also, the length of time necessary for bringing a project from the concept stage to implementation can amount to two years. Such delays not only dissipate concentration and enthusiasm, but moreover cause bottlenecks at the implementation stage when, for example, project cost escalations due to higher equipment and contracting prices may result in still further delays while supplemental funding is secured. The complexity of project accounting procedures hampers the participation of local Egyptian enterprises and even PVOs which could make greater contributions to the CST efforts.

Another constraint grows from the fact that the AID program is not set up to fund a wide variety of individual entrepreneual efforts which could result in the creation of several indigenous capital saving technologies. Currently, to secure AID funding for a project, wide-scale applicability and measureable benefit to the lives of a large portion of the population must be demonstrated. Pilot projects, as implied by their name, are intended as experiments which ultimately will be replicated on a larger scale. These

funding pre-conditions overlook the possibility that collectively numerous individually-focused inventions or adaptations could have an equal or greater impact on the promotion of CST among Egyptians than one large-scale, single-purpose project might have. The Small Scale Agricultural Activities project perhaps comes closest to this concept, although it is singularly focused on agriculture, and is not designed to handle the numerous CST proposals that would be generated by an advertised competitive program.

The introduction of a "Small Grants CST Program," under preliminary consideration at the Mission, would constitute a useful approach to encourage participation of truly small-scale entrepreneurs. Simplified Arabic language applications and streamlined approval procedures would reduce turn-around time and weed out impractical projects while encouraging inventiveness. To promote the dissemination of these indigenous capital saving technology inventions and adaptations, an annual awards report, including designs and instructions where appropriate, could be published and made available for wide distribution through Egyptian extension, technical advisory and other services and offices. The grants program could be supported from a discretionary grants fund.

VI. CONCLUSION

The overall AID strategy has been designed, in the words of the agency, to promote growth, efficiency, and equity. More specifically, the assistance strategy in Egypt focuses on both short-term broad-based economic gains to demonstrate tangibly the value of the Peace accords, as well as on longer term goals to promote dynamic and self-generating development.

The convergence of Egypt's "decentralization" strategies and AID's "bottom-up" approach to economic development has provided the foundation and impetus for the serious consideration and promotion of capital saving technologies in Egypt. It also has created the environment for a considerable increase in the use and distribution of CST in the coming decade. We feel comfortable in making this prediction based on the clear commitment to capital saving technology by the Mission Director and his staff and the program's attention to the complexities and interrelationships of both small and large scale Egyptian needs and the growing recognition of the importance of CST by the Egyptian government.

At the same time, serious attention is being given both by the GOE and AID to mitigating the Egyptian economic and social constraints which prevent the full development of local self-reliance and the introduction, adaptation, and utilization of capital saving technologies. The constraints within the AID system itself, discussed in this report, also need to be confronted and reduced.

The overall effect of AID and Egyptian strategies--markedly increasing local control and self-reliance; introducing credit mechanisms which will allow for the purchase of capital saving technologies and stimulate capital creation for second and third generation activities; promoting labor-intensive activities where supply is abundant; economizing on scarce resources; and developing prototype technologies that are modest in scale and simple to use--will be to significantly increase the demand for CST.

As demand accelerates, however, AID and the GOE will increasingly have to turn their attention to the supply side of CST, beyond the modest but commendable initial efforts, supporting local production as much as possible, and importation of capital saving technologies where necessary. Particular attention should be paid to projects which can significantly increase the information regarding capital saving technologies in order to promote the widest adoption of CST and hence the success of this essential development strategy.

ORGANIZATION FOR RECONSTRUCTION
AND DEVELOPMENT
OF THE EGYPTIAN VILLAGES (ORDEV)

INTEGRATED RURAL DEVELOPMENT IN EGYPT

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Integrated rural development and the role of the Organization for Reconstruction and Development of the Egyptian villages (ORDEV).

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- Field experiments to establish the framework of a development plan for Egyptian villages.
- Cooperation with international organizations.

An Approach to Rural Development through ORDEV

Development is basically an economic process. "Social development," "human resources development," and "rural welfare" are national concepts which acquire meaning only in the context of gains in production which can finance and sustain the non-material elements of development.

Rural development rests on two pillars. The first involves reducting constraints on production at the local level so as to expand the economic and productive potential for a household, a village, a region or a nation. The second involves developing an institutional capacity to optimize the flow of productive investments both with respect to (a) achieving the optimal balance of local vs external (provincial, national, foreign) investments and (b) optimizing the sectoral allocation of this investment.

There is a further confusion in discussions of rural development relating to the distinction between ends and means. The number of participating institutions, gains in rural school attendance, numbers of villages with credit co-ops, interministerial district coordinating committees have all, at times, been suggested as measures of rural development. Rural development, as an end, consist of a system of self sustaining productive investment, maximizing the utilization of local resources (enhanced where

necessary by external resources) leading to a level of rural production sufficient to support an equitable and acceptable level of rural welfare.

Optimizing Productive Investment Flow: Local vs External, and Sectoral Allocation.

The highly centralized system of resource allocation in Egypt proceeds from the centralization of Governmental authority.

A strategy for rural development should emphasize support realizing the objectives of the local government system with respect to genuine decentralization of real development authority to the village, Markaz and Government level -- with particular emphasis on decentralization to the lowest levels.

Development of such a program will require careful analysis of the requirement of both these areas: (1) Capital and technical requirements of village production activities, and (2) technical support for the organizational task of local government decentralization through the training, at various levels, of elected and appointed officials involved in local government decentralization. The longer term and more important elements of such a strategy, however, will probably center on the development of new financial and technical mechanisms for promoting small-scale, private sector, productive investment opportunities in Egyptian villages and on developing a regional and local capacity for the planning, design, implementation and evaluation of economic development projects at the village and Markaz levels.

PART ONE

National Concern in Rural Development:

Agriculture represents the basic economic structure of the country and serves as the main source of the individual's food consumption, as well as being the primary resource for most of the raw materials needed for industry. Moreover agriculture is an important sector in external relationships with the outside world. Yet, rural life is characterized by different modes of underdevelopment. We find a great deal of illiteracy, unemployment, low standard of living, malnutrition and poor hygienic status as compared with urban areas. All these factors need to be improved in order to obtain the standard of living which would enable the Egyptian individual to be adequately cared for.

Therefore, the Egyptian nation has laid a great impetus on rural life in Egypt. A national work program has been sanctioned by the National Conference in July 1971. It stressed that the foundation in the construction of the new state lies in the attention given to a modern Egyptian village.

It stressed the importance of the Egyptian villager as an integrated citizen with equal rights as urban residents. This state of development can only be achieved through the setting up of new human and social relationships in the countryside to promote the village standard to the stage that would allow for dissolving all discrimination between rural and urban life.

It is suggested that an inclusive plan for rural development should be set up for the coming twenty years to achieve rural industrialization, agricultural automation, creation of new villages with proper hygienic housing systems where water and electricity are available as well as educational, medical and recreation services. Eventually this will change the mode of life of the villager. Besides, every group of villages will have a centralized focus comprising all services needed for every village in question: namely, cultural centers, a maintenance station for agricultural apparatus, schools, technical institutions, public hospitals and units for industrialized agricultural products.

Aims of Rural Development

Development is the uniting of direct governmental and nongovernmental efforts to achieve voluntary changes from an actual unfavourable situation to a more desirable one. Therefore, rural development aims to change the style of life of the Egyptian villager as well as to change his modes and means of production. This can be done by attempting to stimulate and promote an individual's awareness, to discipline his life, and to share his thoughts as well as helping out his initiatives, so as to pave the way for the expected desire of change. Hence rural development aims to achieve the following:

1) Individual growth through education, proper upbringing, medical care and cultural orientation. This stimulation can be achieved by increasing the numbers of

nurseries and schools which accept all applicants in school age. Provisions should be made for adult education with stress on illiteracy programs, and for professional care, and experienced staff to help in mental and social adaptation. In addition, maternal, child care and preventative disease programs should be implemented as well as providing health care through the establishment of hospitals.

2) Social change to be achieved by changing the social circumstances through providing sanitary houses with running water, by provision of family planning programs.

3) Raising the standard of living through local development programs based on proper utilization of prevailing possibilities as well as introducing new means of exploiting them, and getting benefit of new technology in agriculture and economic activities.

Efforts in Fulfilling Rural Development in Egypt

Rural reform can be categorized according to the following stages:

1) Individual Service Stage

At this stage every Ministry offers its own individual contribution, e.g., the agricultural units which are entailed in the Ministry of Agriculture, the medical units which are established by the Ministry of Health, schools which were run by the Ministry of Education, ... etc.

2) Cooperative Service Stage

This stage offers collective services in one

particular location e.g., social centers which were established by the Ministry of Social Affairs during 1941 to offer social, agricultural, and medical services. Combined units which were established by the Revolution during 1954, offered social, agricultural, and medical services. Such units were under the auspices of the Supreme Council of Combined Units and covered all the Ministries involved at the area in in question on the local level, such as health, education, agriculture and social services. At the regional level, the Governorate, there was the regional C.U. council which was formed from among the heads of the departments of the Ministries involved.

3) An Exclusive Integrated Development Stage

At this stage, the necessary projects are carried out to achieve development in all scopes of life -- social, economic, and physical. This is done at the level of the village council where all projects regarding the individuals education, medical care, social, cultural, recreational, and agriculture activities are executed.

Obstacles Confronting Rural Development

Rural development faces the following problems:

1) The deep-rooted traditions and the old fashioned ways of doing things which hinder the adoption of mode and new approaches in production.

2) The lack of social awareness among local community members which results in a limited outlook rather than a

positive participation in solving problems.

3) Population pressure on the land linked with the inequities in land distribution resulting in low economic and social standards of living which have accelerated migration to the cities, particularly among educated rural youth.

4) Services are mainly located in the central villages with the result that the 23,000 satelite villages, inhabited by approximately half of the rural population, are deprived of public services or are reached irregularly due to difficulties of transportation and shortage of professional workers prepared to live in these villages.

5) Although education has long been free and compulsory for children between six and twelve, not all school age children go to school with the result that enrollment rates are always higher in urban areas than in rural, and higher for boys than for girls. This is due to a lack of economic means, and the pattern of Egyptian agriculture which require child participation in working in the field in pest control, cotton packing, and other tasks.

6) Large family size, with five or more children and a shortage of effective family-planning measures thus affecting economic, health, and nutritional conditions of rural families -- additionally, the prevalence of diseases such as bilharziasis, ancklostomiasis, and trachoma, are widespread and increasing because of inadequate sanitary facilities.

7) Lack of adequate social services for children and youth adversely affects the rearing of the young generation, and the lack of proper educational, and recreational facilities for professional workers, and their families discourages them from living permanently in rural area.

PART TWO

AN OUTLINE FOR THE LOCAL GOVERNMENT SYSTEM IN EGYPT

The policy of the Arab Republic of Egypt, as regards governmental system, is to set up a democratic growing society, through achieving a system that gives the people the right to participate and to express their needs. This system should also build successful co-operation between the people and officials representing the central government, so that they can respond to the attempts made to create a real local government system, to ensure their participation, and to stimulate their interest in the development of their local community.

There is a real need for this system of administration, which is used everywhere, to face problems such as:

1) The growing needs of the rapidly increasing population which has made the central government incapable of covering local needs, and of making local communities at the same time better able to deal with their own problems by introducing better and more suitable measures.

2) Projects executed by the central government are usually of a prototype nature; projects corresponding to the /

varied needs of local communities could better be developed by local authorities.

3) The participation of the people in the development of their communities can be best achieved through local administration -- people through this system become more cooperative and more receptive to new ideas.

4) Rendering local services through elected councils is an effective way of training people in participation in a democratic ways.

5) Efficient local councils can play an important role in promoting the welfare of the community they serve, as well as the development of the country as a whole.

6) Local administration ensures a more fair and a better distribution of the financial resources and projects.

UNITS OF LOCAL GOVERNMENT IN THE A.R.E.

The units of local government are the governorate, the Markaz (district), the town, and the village. Each unit has a juridical personality. The Governorate council, the town council and the village council respectively represent their jurisdictions.

Distinctions in the patterns of economic activity and the number of services can be made between a town and a village. However, a village may become a town, and be given "town" status if it develops into an industrial or commercial center.

In the local government system, there are 25 governorates, and of these, 21 governorates include rural areas. Table 1 gives the population by urban and rural areas of

these governorates. Table 2 gives the nuber of local units for each governorate by markaz, village units, total number of villages, and "satellites" or dwelling assemblies too small to be called villages (ezba, kafr, naga'a), etc.

ORGANIZATION FOR RECONSTRUCTION AND DEVELOPMENT OF EGYPTIAN VILLAGE

The Establishment of the Organization

Realizing that rural problems are inter-related and affect each other, and overall development plan was needed to change the whole system of life in rural villages of Egypt.

Table 1: Population (1976) of Governorates or A.R.E. having Rural Areas.

No.	Governorate	Rural Area	Urban Area	Total
1	Ismailia	186.191	165.698	351.889
2	Kalubia	989.420	684.586	1.674.006
3	Sharkia	2.090.854	530.354	2.621.208
4	Dakahlia	2.077.484	655.272	2.732.756
5	Damietta	414.300	142.815	557.115
6	Menoufia	1.374.291	336.691	1.710.982
7	Gharbia	1.527.966	766.337	2.294.303
8	Kafr El Seikh	1.111.609	291.859	1.403.468
9	Beheira	1.863.834	681.412	2.540.246
10	Giza	1.039.970	1.379.277	2.419.247
11	Fayoum	863.817	276.428	1.140.245
12	Beni Suef	832.422	276.193	1.108.615
13	Menia	1.624.909	430.830	2.055.739
14	Assuit	1.225.346	470.032	1.695.378

Continuation of Table 1:

No.	Governorate	Rural Area	Urban Area	Total
15	Sohag	1.519.669	405.291	1.924.960
16	Kena	1.314.316	391.278	1.705.594
17	Aswan	390.275	229.657	619.932
18	Matrouh	61.736	51.036	112.772
19	New Valley	43.689	13.002	56.691
20	N. Sinai	10.637	10.104	20.801
21	S. Sinai	" "	" "	" "
	TOTAL	20.552.089	8.178.048	28.730.146

Table 2: Number of Local Units in Governorates having Rural Areas in the A.R.E.

No.	Governorate	Markaz (District)	Village (Units)	Total No. Villages	Other (Satellites)
1	Ismailia	4	9	20	521
2	Klubia	7	37	193	960
3	Sharkia	11	69	451	3879
4	Dakahlia	9	65	452	1818
5	Damietta	3	22	55	316
6	Menoufia	8	63	302	717
7	Gharbia	8	52	313	1197
8	Kafr El-Seikh	7	40	193	1131
9	Beheira	12	66	416	4460
10	Giza	5	39	166	616
11	Fayoum	5	36	159	1566
12	Beni-Suef	7	38	218	657
13	Menia	9	57	337	1103
14	Assiut	10	49	240	241
15	Sohag	11	51	264	1879

Continuation of Table 2:

No.	Governorate	Markaz (District)	Village (Units)	Total No. Villages	Other (Satellites)
16	Kena	II	48	I65	2174
17	Matrouh	3	10	27	20
18	Aswan	4	22	85	578
19	New Valley	2	10	60	50
20	N. Sinai	4	6	I2	--
21	S. Sinai	4	--	--	--
	TOTAL	I49	808	4224	23888

Ezba, Kafr, Naga'a, etc.

Because the areas of rural development are within the realm of several Ministries, a coordinating system was needed to initiate an intergrated program for rural development between Ministries and the local executive organs involved. For that reason a republican declaration had been issued in 1973 to establish the "Organization for Reconstruction and Development of Egyptian Village (ORDEV)" headed by a vice Minister for Local Government.

The function of this organization is to establish general plans to develop rural communities within the framework of the general policy of the nation. Plans thus developed are to be submitted to the cabinet by the State Minister of Local Government, through the Ministerial Committee of Local Government for approval. At the same time, ORDEV is charged with implementing policy and programmes into action in collaboration with the Ministries, the local

governmental units, and all agencies concerned. This allows for the fulfilment of the project as planned, its prompt termination according to a particular time schedule, its evaluation, and the study of all potentialities available; ORDEV is also charged with the preparation, execution, and presentation of necessary investigations, and for the advertising, and training programs needed for the realization of rural development plans.

Relation with the Authorities of Local Community

Although there was some sort of local administration in some activities in some parts of Egypt, the general local administration system was adopted in 1960. Units of local administration system are: Governorates, towns, and villages with each unit endowed with a legal entity and represented by a governorate council, town council, or village council.

Egypt had been subdivided into 25 governorates, 138 Markaz towns, and 850 villages (Law 124 of 1960).

The structure of local councils combined three elements; elected members (who were the majority), some selected members, and some official members.

On May 15, 1971 the Law of Local Administration (57-1971), was amended, and two councils were established at the Governorate level -- a People's Council and an Executive Council.

The former is to suggest policies, adopt resolutions and provide a forum for the public on local concerns such as education, culture, transport, and irrigation. The

council has the right to decide on the budget of the Governorate. The latter is to put the decision into practice.

The policy adopted by the law No. 52, issued in October, 1975, is to delegate to local authorities all functions of local nature, such as local utilities, town planning, etc., more authorities in Law No. 43, 1979.

Functions in which the nation as a whole take: a common interest, the policy of the law is to selectively delegate such portions in which them such as technical education, medical services, and economic projects, as relate to the Governorate or town level. Functions which by their nature are exclusively central such as defense and national communication, are retained by the central government.

Therefore the effort of local councils becomes essential towards the achievement of the projects planned for integrated rural development. Also a new level was established, the district or markaz level.

Policy of the Organization

Development aims to change the present life situation to obtain more desirable conditions. Therefore, it is necessary to follow an inclusive practical pattern, characterized by the real features of environmental studies of the community from all aspects to give the right balance to the whole picture. It is within this framework that the plan of work was established as follows:

A. Defining reconstruction and development of the

Egyptian village as the process of rebuilding all aspects of rural community including construction as well as economic, cultural and social aspects, to obtain a balanced development.

B. To utilize the experience of others and of previous studies made on rural life so as to be able to take off from where others stopped as well as to know the possible obstacles or problems involved to avoid in future planning.

C. Certain experimental villages must be chosen as samples to provide the base-line for planning this project. Nonetheless, a long-term plan should also be formulated within the comprehensive national planning system to set the future outline of what a developed rural community should be like. In addition, such a plan would offer a guideline on how to achieve increased industrialization of agriculture, and on how a villager can be made responsive to social changes, and accelerate its further development.

PART THREE

PLAN OF WORK

ORDEV's plan of work seeks to ensure the strengthening of the potentiality of integrated rural development system by increasing the participation of the local people in the running and supervision of their local rural communities in implementing programs that are needed to cover their greatest needs through the creation of local funds.

A. Through legislation, the local government law No. 43

of 1979 invests all elected local bodies, including village councils, with vast powers. It establishes elected councils which offer local inhabitants the opportunity of shouldering their responsibilities.

B. Efficient Manpower

Administrative measures represented in the granting of local government officers incentives to encourage them to work closely with local councils, and to reside in rural areas (such as construction of dwellings for them, provision of means of transportation for the council chairman, granting them adequate allowances and the opportunity for promotion to higher posts in local government as well as attendance of training courses to facilitate discharging their functions). Village Councils have been supported by the personnel specialized in various technical fields in order to deliver important services at the village level.

C. Local Resources

In order to boost the material potential of villages local councils, a special account is set up for Egyptian villages services and development to be financed by available local resources to contribute to village development projects. Additionally, the people's participation, by mobilizing the citizens own resources to develop their societies, is emphasized.

According to articles 69, and 70 of law No. 43 of 1979, the Executive Committee of the Village Council undertakes management of the special account, the

functions of which are:

- finance production projects and local services within the framework of the governorate's public services.
- complete projects in the village where the appropriations in the local council's budget are inadequate.
- establish projects of a local nature founded on self-effors.
- raise the quality of delivery of local public services within the village council control.

The special account's revenues accrue from the following:

- seventy five percent of the proceeds of the original tax levied on cultivated land and 75 percent of the additive taxes. Local taxes and fees decided by the local council.
  within the village.
- profits of council-owned projects which are executed on the basis of "revolving funds" operated by the village council.
- proceeds of the ownership of buildings in a village constructed through the special account.
- donations, gifts and endowments which the village local council approved, to be assigned to the village.
- allowances and contributions of international organizations.

D. Research and Studies

The need for a comprehensive course of study which deals with the present and past of rural life stronly felt. In connection, and in order to combine theory with practice, a set of studies and research have been made in collaboration with the Academy for Scientific Research and Technology.

Regional universities experts at the local administration center of the Ministry of Planning.

The aforementioned research and studies have delat with the following:

1. Research on evaluation of previous and present experience in the areas of social, economic and administrative development of the Egyptian countryside to link the past with the future in a manner that would permit effective planning drawing upon the past's positiveness and avoiding its negativenesses in order to save effort, time, and money.
2. Investigate manpower in the countryside to estimate and work out requirements for skilled labor which will be necessary to undertake rural development projects and as a first step in the transformation of redundant rural manpower into a productive force in the various domains especially in the rural building and rural construction sphere.
3. Research to evolve and derive alternatives to the use of Nile silt for the manufacture of building materials required for Egyptian villages construction and development projects instead of mining the

priceless arable soil. This research has resulted in identifying the availability of abundant sources of clay in the desert. Tests were carried out, and they have proven to be a successful source of primary material for building blocks and bricks.

4. Research to iventory Egyptian natural resources, sources of revenue, private as well as public services, and the citizen's views in respect therefore, in order that the rural development may be planned on sound basis. This comprehensive, economic, social, physical, and administrative research which encompassed six hundred large and small villages and was included in the ORDEV's plan of action for 1975, was conducted in collaboration with the Academy for Scientific Research and Technology's social research council.
5. Research regarding management of village revenues carried out by the Faculty of Commerce, Mansoura University, to study revenues and expenditures as well as an assessment of savings at the individual and the village level. Also, study and assessment of revenues accruing from various sources, means of collection and items of expenditure in addition to evaluation of cooperative marketing.
6. Research concerning performance averages and the program budget at the village and Markaz "a division of territory larger than a village and, smaller than a town" is carried out by the Faculty of Commerce, Mansoura University to assess the service delivery

rates, the method of preparing the special budget and the performance follow-up in addition to studying the relationship between the local councils and the central agencies.

7. Study on planning for village development carried out by the local government center (Garden City, Cairo) to ultimately decide on a model suitable for application for village development by relying on the local available potential and to realize integration with the development program in other villages.

8. Research in ten districts (Markaz) in the eight regions in Egypt to implement the strategy for rural development.

9. Study concerning reorganization of the village agencies undertaken by the Faculty of Commerce, Cairo University, for the purpose of reorganization of agencies in a manner that would bring about integration of efferts made by the various agencies for rendering services, designed to lift the standard of services performance and to give credit according to the achievements accomplished.

E. Exchange of Experiences

For the purpose of coordinating the efforts exerted in the sphere of the rural development, the tabulation and utilization of all the data and information gathered regarding the social, economic, administrative, physical, cultural traditional and customary aspects, etc., ORDEV has contracted with the Academy for

Scientific Research and Technology to set a documentation center in one village to be at the disposal of scientists and researchers in the areas which serve rural development.

F. Training and Field Work

In the field of upgrading the efficiency of personnel, and exchanging their skills and experience in the sphere of rural development, a center is being set up for training, study, research documentation and statistical fields in order to serve such purposes, whether in Egypt or in the Arab world.

The center will be capable of accommodating between 60 and 120 resident students so that they may devote their full-time research and study.

G. USAID Training Program

As regards the agreement between USA and ORDEV for decentralization of local government these numbers of participants were sent to USA and the Third World:

USA: - Five member staff from ORDEV headquarters to serve in the academic. - Nine from heads of ORDEV departments in the governorates.

Third World: - Three from ORDEV and USAID to study the program for sending 30 groups annually in a five year program beginning with 1980.

ORGANS OF ORDEV

Recruitment and training practices of ORDEV personnel are designed to improve organizational efficiency. Units have been set up to undertake the responsiblity of planning and preparing the rural development program at the central, regional, and local levels in order to bring about integrated preparation of the development plan economically, socially and physically, while simultaneously, augmenting and strengthening the managerial potential of local councils.

Means of follow-up, execution and evaluation of programs and projects already planned are specified and supported by ORDEV staff at different levels.

1. The Central Level

ORDEV's organizational structure is composed of the various sections in such a manner that would realize the integrated planning of rural development economically, socially and physically. In order to boost ORDEV's capabilities at the central level, ORDEV may resort at its discretion to scientists and experts in the various development sphere within the framework of the different committees, in order to bring about the integration and coordination of the plans and programs of the various ministries. Two committees were established;

A. The Board of Governors, which replaced in Law 43 1979 the ministerial committee for local government and services. The council shall be administrating

ORDEV's rural plan to ensure significant development.

B. A ministerial order was issued setting up the coordinating services committee encompassing the First Undersecretaries for Development of the various ministries concerned with rural activities, namely Youth - Transport - Education - Health - Information and Culture - Agriculture, Irrigation - Planning, Housing, Reconstruction - Social Affairs - Local Government - Rural Electrification.

2. The Regional Level

A. Governorate Level.

Reconstruction and development of the village departments were set up within the structure of the governorates, thus confirming the principle that rural institutions must undertake the processes of assisting in planning and coordination of the various efforts concerning rural development in the governorates and report on them to ORDEV.

They likewise participate with ORDEV in proposing and carrying out the studies and research related to the advancement and progress of villages and involving their services and utilities.

B. The Local Level (village unit).

Village Councils powers are in order to enable them to become an administrative means of carrying out development programs through raising the

efficiency of their personnel. Village Councils' Executive Board chairmen are nominated from among those who have acquired practical experience and field practice supported by a desire to work in rural areas. Besides, training programs have been worked out for Village Councils Executive Board Chairman and personnel in rural development in order that they comprehend and understand their mission and discharge it with zeal.

PART FOUR

FIELD PRACTICE OF THE PROPOSED DEVELOPMENT PLAN

Field practice is based on the comprehensive survey of the first phase village. For this purpose seventeen villages have been selected in fifteen rural governorates which represent various forms of activities, for they include touristic-agricultural-fishing-rural and industrial areas.

These seventeen villages were assisted in completion of the minumum services and utilities which cover the rural society's requirements. Work on such villages started late in 1972 and completion of the proposed programs continued up to the end of 1974. The programs included execution of social and economic development projects for the purpose of rural areas revival in addition to physical development which encompassed village planning and housing improvement as well as construction of new roads. This program, initiated by ORDEV, provides that the State bear twenty percent of the rural dwelling cost and the

beneficiary makes a "downpayment" of the price (which in most instances is equal to the value of the compensation due to him for demolishing his previous house). The balance which amounts to sixty percent is payable over 20 years in annual installments and is interest-free.

In the second phase, the experimenting base was expanded by selecting a village at each administrative Markaz (district) in the Republic, where the basic services are provided (health-social-agricultural-educational) in addition to the provision of water and electricity. In order to promote local response to, and acceptance of evolution, local councils in collaboration with the ORDEV staff in the goveronorates studied the proposed projects in the physical, social and economic spheres and laid down priorities for execution of each project. Care was taken that development projects be carried out on the same lines followed in the seventeen villages in the first experimental stage, taking into consideration the village normal expansion whether from its interior or exterior and its provision for water and electricity.

A new system was carried out in rural housing, namely the villagers themselves undertook execution with the aid of local contractors in order to bring down the cost. The development projects likewise, included the activities such as earthfilling of ponds or transforming them into fisheries, as well as propagating water closets where suitable dwellings are provided with water and electricity.

In the field of social development the programs fortify the existing activities and benefit from the existing

stock of social capital such as combined units. Simultaneously, the program expands the vocational training centers for apprentices (boys and girls) to encourage transformation of villages into production centers and to create new job opportunities, enhancing the incomes of rural families. This is over and above cultural and recreational centers for girls and women, as well as augmenting existing youth centers or constructing new ones.

Such social programs take into consideration the existence of a link with the economic development projects which bring about improvement of local production. Examples of these are animal breeding such as the use of improved poultry and the creation of professions and trades which are related to the economic and physical activities in villages, e.g., carpentry workshops to produce windows, doors, etc.

This may create new job opportunities for workers. The following illustrates; ORDEV projects up to the total cost of such projects amounted to nearly 19.68 million Egyptian Pounds from 1975 to 1980, or about 24 million dollar.

YEARS	NO. OF VILLAGE COUNCILS	TOTAL COSTS	TOTAL COST OF PROJECTS			OTHERS
			ECONOM.	SOCIAL	PHYSIC.	
1. Experimental villages 1972/ 1975		1,442,403	162,561	80,773	1,120,073	78,996
2. Rest of the plan						
1975	111	1095322	898509	83724	113089	
1976	147	2576950	148841	261085	827624	
1977	145	2482500	1780918	271072	430510	
1978	135	3244838	2488071	328276	428491	
1979	122	4013000	2607000	615000	791000	
	677	14855013	2425300	1639930	3710787	78996
1. General Projects						
Training Center		215300				
Research		108360				
Transport		175612				
Other		30143				
		529415				
TOTAL:	15,384,428					

Table 4: Governorate Village Councils Projects Financed through the Period from 1972 to 1979.

Governorate	Total No. of Village Councils	Councils in ORDEV plan	Total (LE 1000)
Ismailia	10	7	138898
Kalubia	37	30	648085
Sharkia	71	54	1090397
Menoufia	72	52	898833
Gharbia	24	49	803772
Dakahlia	64	63	1314076
Damietta	53	19	382543
Kafr El Seikh	43	36	774546
Beheira	67	54	1181255
Matrouh	39	7	230000
Giza	37	32	565969
Fayoum	38	30	600431
Beni Suef	57	37	814611
Menia	49	48	1280104
Assuit	51	40	671541
New Valley	48	10	312725
Sohag	22	42	896621
Qena	10	336	896621
Aswan	10	18	641904
N. Sinai	6	3	154410
S. Sinai	—	-	20400
TOTAL	808	667	14154313
			700700
			529415
			15384428

In the year 1980:

-No. of Councils in ORDEV Plan - 146
(Covering all the village units)
-Investment in pounds - 4,100,000
TOTAL INVESTMENT: 14,484,428

ANNEX

LOCAL DEVELOPMENT FUND

Capital is the lifeblood of development, and it has the potential to transfrom plans and programs into tangible reality. Projects cannot be implemented in the absence of capital. National circumstances are greatly influenced by the resources available for national plans, and the existing capital base may not be adequate (especially under the developing countries circumstances) to satisfy local requirements. The existence of alternative financing, such as the services funds, or what is termed under the local governments law No. 43 of 1979 the "village account", is meant to increase the effectiveness of development through the collaboration of governmental efforts as represented by the activities of governmental bodies with people's efforts. Law No. 43 of 1979 provides flexibility in financing local councils, over and above:

- Assert the identity of village councils and build confindence among villagers by giving them a role in planning for local projects and participation in their financing as well as supervision of their execution. This is meant to give substance to the local governments philosophy of allowing citizens to manage their own affairs and supervise their utilities.
- Safeguard the positive contribution of members of local institutions to the projects which have a bearing on their life as a consequence of their positive cooperation in implementing local projects.

- Offer the village councils the opportunity to acquaint themselves with planning methods and their execution of programs which the national budget is incapable of implementing.
- Carry out long-term plans, programs and projects such as the purchase of lands required for construction projects, a villages expansion and supplying it with utilities and services.
- Provide flexibility for financing local projects and facilitate their execution.
- Provide a permanent source of financing local development projects and expand on the existing ones independently of what government funds may provide.

Utilization of the Village Special Fund

1. Finance production projects and local services within village council consistent with the governorates general policy.
2. Complete the village projects when the local council regular budgets are inadequate for their completion.
3. Carry out projects of a local nature which are based on self-efforts.
4. Improve the delivery of local general services within the framework of the village local council.

Sources for Revenue for the Village Special Fund

Pursuant to Article 70 of Law No. 43 of 1979 concerning local governments, and Article 1 of Ministerial Order of 1976, concerning the regulations organizing the use of this account, its source of revenue are as follows:

1. Seventy five percent of the proceeds of the tax levied in the accounts favour in accordance with Article 37 of the law and collected within the village boundary, which allowed the establishment of a local development and services account.
   It sets its sources of revenues as follows:
   - The tax levied by a governorates local council in favour of such an account.
   - Profits accruing from production projects financed by the said account.
   - Donat:ons, gifts and endowments a local council agrees to assign to the governorate.
2. Profits of the projects which are managed on the basis of "revolving funds" supervised by the village council.
3. The money accruing in consideration of ownership of structures within a village whose construction was undertaken through the special account.
4. Rental values of dwellings and utilities constructed through the said account.
5. Donations, gifts and endowments a local council agrees to assign to a village.
6. Grants and contributions by recognized international organizations.

Methods of Management

A village's executive committee undertakes the account's management. The said committee is set up according

to Article 73 of Law No. 43 of 1979, as follows:

- The Village Head who has the powers of a Department Head.
- The Village Secretary who is the committee's treasurer.
- Heads of a village's executive bodies who are nominated by the executive regulations.

Chairmen of local council committees are represented on the aforementioned committee without prejudice to their right of supervision.

This committee is considered the authority controlling the affairs and management of the account and management of the account and formulating its policy. For the accomplishment of this objective, it is entitled to take such measures and pass such resolutions it was established, taking into consideration:

1. The general budget of the village council, Markaz and Governorate, and their respective appropriations for various projects which might have a bearing on a village development.
2. Assessment of the various expected revenues of the accounts projects. This will permit determination of the projects that can be financed under the special fund, using the projects surplus in financing and implementing similar projects that would serve the same purpose originally planned for.
3. Prepare the account's annual draft budget within the framework of the general policy as laid down by ORDEV.
4. Submit the account's draft budget to the villages local council within one month from receiving it for

its approval. Subsequently, it permits the approved plan and the budget to the Markaz, Governorate, and ORDEV for comment and review. Budgets shall be considered final if no reply or objection is received within fifteen days from the date of notification. If any remarks are received they shall be submitted to the village council for review and the council's views thereon shall be final.

APPENDIX B

CATHOLIC RELIEF SERVICES
MULTI-CROPPER THRESHER/WINNOWER

CARE EGYPT
HIGH DAM LAKE INTEGRATED BASIC SERVICES PROJECT

CATHOLIC RELIEF SERVICES MULTI-CROPPER THRESHER/WINNOWER

SUMMARY OF ACTIVITIES AND ACCOMPLISHMENT OBTAINED TO DATE

The Ford Foundation and Catholic Relief Services, CRS, have over the past four years used the strengths of each organization to complement the other with the result that small scale machinery brought to a tested prototype stage by the experts of the Ford Foundation was, in the next step, provided an institutional home by CRS. CRS found a reliable manufacturer in the private sector, secured funding for the first production run, supervised manufacture to assure quality control, negociated a credit arrangement with the Agriculture Credit Bank that allows poor farmers the possibility of purchasing these machines, set up in the field servicing, repair and training facilities as well as other necessary back up services. The two partners monitored the project closely, carried out regular evaluations, and developed a feed back system that led to several design and manufacturing changes. The final result is a modified thresher-winnower fully optimized for field conditions in Egypt.

Another accomplishment of the project period covered under phase I was to develop, test and manufacture a centrifugal pump suited to the low head pumping conditions in Egypt. This pump can now become part of an integrated system for more optimized use of the diesel engine. The engine would be used less than four months per year if it were only powering the thresher. By combining it with a low lift pumpround benefit is achieved.

The Ford Foundation in 1975 began first developing several prototypes os small scale diesel powered multicrop axial flow threshers under its "10 hp Agriculture Mechanization Program". With tractor powered threshers unable to handle even half the wheat or rice crops and with no machine fielded in Egypt capable of threshing sorghum, there was an obvious "gap" to fill. Once a multicrop prototype thresher had been successfully field tested, CRS encouraged regular production by offering to purchase the initial production run. Next, CRS negociated an arrangement with the Agriculture Credit Bank that allowed small farmers, with normally insufficient collateral, access to credit for the purchase of these machines.

In the initial stages, Ford Foundation and CRS have to provide training, servicing and maintenance, as well as spare parts' stocks. Ford Foundation and IDRC encouraged a Public Sector Company to manufacture the first machines. CRS, on the other hand, encouraged a Private Sector Company to manufacture the threshers. The thresher produced by the private company is superior on all points. While the thresher is locally manufactured in its entirety, there is available no locally manufactured diesel engine that would meet the horse-power and engine weight requirements. In the initial stage of the project, two imported engines meeting our requirements, HATZ and DEUTZ, were found in limited quantities within country. However, in the present second phase, CRS is in the process of securing hard currency funding to purchase and import several hundred diesel engines, since it will only be at a later stage that either the public or the private sector company will be able, on the basis of a well proven track record, to secure the hard currency conversion from the Central Bank.

The threshing-winnowing unit, which was the major focus of phase I, has now proven itself in, not only field tests during four seasons, but also in actual farmer ownership and usage during three seasons of the period covered by phase I. This, coupled with experience during eight seasons of fielding thresher prototypes and public sector company manufactured machines, to a thresher-winnower unit designed, redesigned and remodified, that is now judged to be optimal for conditions prevailing in rural Egypt. The phase I final production run of 22 units manufactured during the March-April 1979 period by the private sector company incorporated all the improvements by both extensive field tests and farmer demand. These units are vast improvements over earlier versions, which even with their less than perfect design won high acceptance from the small farmer.

PROGRAM ASSUMPTIONS

CRS, satisfied with the accomplishments of phase I, set forth a series of assumptions to help formulate an action program for increasing local manufacture of the agriculture machines proven successful in phase I as well as to determine phase II funding requirements.

1. No small company manufacturing these units will, during the life of phase II, be able to secure through the Central Bank or through commercial banking facilities access to hard currency to purchase imported engines.

2. No agent of a foreign manufacturer of suitable engines will order or stock a substantial quantity of engines in the country. A desire for a quick turn-over and profit and a fear of blocking short supply capital over any extended period represents the current modus operandi.

3. No bank, local or foreign, would extend credit to a small manufacturer to make the thresher-pump units on the basis that it is a still unproven item, is too small and too risky.

4. The climate for private risk investment in the rural areas remains ultraconservative, only venturing with basic proven items for a guaranteed market.

5. Small scale spare parts manufacturing facilities exist almost everywhere in rural Egypt. Owners and hired staff have basic skills and they adapt easily to new machines. Blacksmiths not only repair basic agricultural machinery, they replicate, assemble and manufacture custom models, but do not produce in series.

These assumptions have been tested and varified on many occasions by Ford Foundation and CRS staff. Like phase I, phase II is premised on the conclusions flowing from these assumptions and is designed to provide appropriate and effective interventions that bring about tangible results.

The strategy and interventions are based upon newly emerging realities in rural Egypt and the small farmer's reordering of priorities. The first section of this paper attempts to document these changing realities. Those realities that are germane to this project's proposed interventions are :

1. A country with one of the world's highest cropping intensities and and highest yields;

2. very small rural land holdings and a 50% landless rate, coupled with high paying job opportunities outside the rural areas, has led to a heavy emigration of adult males;

3. a labor shortage at two peak periods, May-June and September-October, confirmed by fivefold pay increases during these peak periods as compared with only a 50% raise in industrial wages for the same three year comparative period.

4. a total number of operational tractors incapable of handling even one-quarter of the cultivated land.

These realities, summarized in the above 4 points, do make the point that some form of mechanization is warranted and they do provide ample justification for our proposed intervantions foreseen in phase II.

PROGRAM STRATEGY:

Labor scarcity during this peak months delays land preparation and planting of the next crops and reduces output, while separation and delay between the activities of threshing and winnowing for both wheat and sorghum causes considerable losses and damage to the grain of both crops. Mechanization of certain activities during these "bottleneck" periods would increase agricultural output without necessarily displacing labor. It was this conclusion, based on a through study of practical realities in rural Egypt, that led several non-government agencies to develop a strategy for appropriate and meaningful interventions

The major concerns of the Ford Foundation and CRS were to develop and field agriculture machinery that met most of the following criteria:

1- low in cost, so as to be available to the 83% of farmers with less than two hectares, as well as to cooperative groupings of tenant and landless farmers;
2- innovative;
3- small in scale, to fit small and fragmented land holdings;
4- appropriate, employing technologies that fit the farmers' needs and assure relatively easy operation, maintenance, and repair at village level;
5- manufactured locally, thus encouraging local employment and avoiding dependency on imported parts;
6- a means of alleviating rather than contributing to rural unemployment and underemployment;
7- a means of increasing agricultural productivity;
8- a means of freeing tractors for primary land cultivation at a critical time of the year when delay in tillage can result in decreased yields of the following crop.

PHASE II PROPOSED INTERVENTIONS

The major objective of phase II is to encourage the production within Egypt of progressively larger numbers of these optimum units by an increasingly large number of small rural (private) factories and repair shops. The local blacksmith has found that he cannot only repair and make all the spares necessary, but also that he can produce the entire unit. At present, only one small private sector company produces the thresher unit. Hopefully, in phase II, at least two to three more private companies or shops can be encouraged to initiate small production runs.

1. FOUR HUNDRED THRESHERS MANUFACTURED IN EGYPT

   The first year of phase II calls for financing the purchase of 150 imported diesel engines and the local production costs of manufacturing 150 thresher units. The second year foresees 250 engines imported and the local construction of 250 threshers.

2. FOUR HUNDRED LOW LIFT PUMPSETS

   Phase II will also cover the financing of the production of 400 low lift pumping units. Production of 150 units in the first year will be centrifugal units, but continued research, possible redesign and testing may cause us to opt in the second or third year for the production of an axial flow or other type pump. The rationale for proceeding with the production of the pumping unit is fully justified and in line with the strategy defined in phase I. The design technology has been tested and found acceptable, and the capacity for quality production exists. The imported diesel engine coupled with the thresher works for no more than four months per year. During the eight month downtime it could be put to productive use powering an irrigation pump.

The budget required is based on the following current prices per unit :

1. Imported diesel engine	$ 1,200
2. Locally manufactured thresher-winnower	$ 1,575
3. Locally manufactured irrigation pump	$ 378
Total	$ 3,153

sorghum (the tractor powered thresher does but only at the cost of excessive and unacceptable grain damage) and at the same time (1) winnow and (2) produce a by-product the farmer desperately wants in the September-October period, i.e., feed for his animals. Under the traditional method of threshing sorghum by beating with sticks, only the grain is recouped and the remains of the head are thrown away or used as fuel materials. The CRS thresher chops the remains of the head fine enough to be an excellent feed extender. Without a doubt the machine has its greatest impact during the sorghum harvesting season. It is also the time the owner operator has an opportunity to significantly increase his net income from the thresher's operation. During the sorghum harvesting season of 1977, CRS prepared a short report for future owner-operators that attempted to demonstrate the income earning potential of the machine and also showed how poor maintenance would cut into the profits. This report suggested that the owner-operator could charge LE. 4.00 ($ 5.72) per hour and still do the job of threshing and winnowing the production of one feddan of sorghum (1,700 Kgs per feddan threshed and winnowed in 1 hour) at half the cost of the traditional method thus bringing great savings to all parties. In 1977, the owner-operators reacted to this suggestion with scepticism and only a few dared think that one day they would be able to charge LE. 2.00 per hour, the maximum rate charged by a tractor. However, in 1978 most were charging LE 3.50 by mid-harvest until one owner dared, and succeeded in charging the suggested LE. 4.00 per hour. This farmer-entrepreneur earned over LE. 2,000 profit in the 6 week period of the 1979 sorghum threshing-winnowing season. In the 1979 sorghum season most farmers-owners were receiving LE. 5.00 ($ 7.15) per hour custom servicing and realizing a daily profit in excess of $ 60.00 if they worked the machine 10 hours daily. At LE. 5.00 per hour these owners were receiving twice the hourly fee received by 60 HP tractors.

Phase II would also include prototype development and testing of a small traction unit to give mechanized mobility plus, or in combination with, a small trailer unit, for hauling seeds and fertilizers to the field and for transporting the pump unit and the thresher unit, as well as agriculture produce.

A high pressure chemical spray unit will likewise be developed and tested. If initial production units of any of these additional pieces of machinery were warranted during phase II, the costs for initial production runs would be covered by funds accumulating in the revolving fund (downpayments plus instalments on purchase of engine, thresher and/or pump unit).

The common irrigation rotations are :

Spring : Spring (February to mid-April)
5 days heavy application
5 days light application
5 days dry

Summer : Summer (mid-April to mid-August)
6 days irrigation
12 days dry

Nili (FALL) : Nili (mid-August to December)
7 days irrigation
7 days dry

From an analysis of the above cited intensive irrigation rotations, it is obvious that the engine, if combined with an irrigation pump, can be put to productive use, as a minimum, 100 to 130 days per year. If, however, the owner- operator rents out his pumping unit or sets up a custom operations to service his neighbors, even higher ratios of productivity can be obtained. The income generated from renting the pumpset or from custom servicing can easily exceed LE. 1,000 net profit per annum : 100 days x 10 hours per day x LE. 1.00 net per hour (LE. 1.50 current charge per hour less LE. 0.5. operating costs which include depreciation and interest = LE. 1.00 net per hour) = LE. 1,000 net income from irrigation.

The income generated from the threshing-winnowing operations is, potentially, much higher and within a shorter time-frame. The key break through of the threshing unit developed under the joint CRS-Ford Foundation auspices is its multi-crop capability. The machine efficiently threshes and winnowes two major cereal crops, wheat and sorghum, plus with minor modifications, another major cereal, rice, and minor crops such as chick peas, broadbeans and soybeans. No modifications are required for the threshing of barley, clover, lentils and fenugreek. Grain damage is considerably lower than the large tractor powered threshers and is practically nil. Critical to an appreciation of the effectiveness of this machine in "filling gap" is the realization that there is no machine manufactured in Egypt (and only a handful of imported ones) that can effectively thresh

ECONOMIC EVALUATION

A report was prepared for the Ford Foundation by Sarah Potts Voll, entitled "Small Scale Mechanization Alternatives for Egypt : An Economic Evaluation", 5 June 1979. The report determines that the multi-crop thresher, already developed and being put into use through CRS promotional efforts, is capable of yielding very favorable economic returns (internal rates of return of 235% compared to tractor and drum and manual method), given reasonable organizational ability on the part of a custom owner-operator. The estimated costs of operating either the thresher or the thresher-pump system are lower in all cases than the costs of available alternative methods and machines. It is clear from the hourly cost calculations in the tables that the multi-crop thresher is superior to the traditional non-mechanized threshing methods for all three crops considered, from both the operators' and the farmers' points of view. The differential is particularly wide in the case of sorghum, where since there is no alternative mechanized method of threshing, the operator can charge LE. 4 per hour, and still provide a service at less than half the traditional costs. The differential is less dramatic for wheat threshing by norag, but is still substantial. The multi-crop machine is not as clearly superior to the mechanized alternatives for threshing wheat. A drum thresher powered by the engine of a 42 hp tractor can thresh wheat almost as cheaply as the axial flow thresher. The latter's advantage is that, unlike the tractor and drum, it also winnows the wheat and saves the farmer the LE. 4 per fedden winnowing charge. This advantage is reduced somewhat by the multi-crop thresher's current inability to cut the straw as finely as the farmer would like. As there is no available alternative machine for threshing sorghum and as the costs of manual threshing have become very expensive, the multicrop thresher is most clearly competitive in the Middle and Upper Egypt sorghum zone, where it has already been introduced and used with greater success than in other areas.

Another zone where the thresher already appears to be competitive is the rice belt in the northern delta. The predominant method in use there now is to pile rice, drive over it repeatedly with a tractor, and then to hand-winnow it. The multi-crop thresher could do this whole operation more cheaply than the tractor if the extra expenses of the hand winnowing are taken into account. Additionally, there is no need to chop up the rice straw.

The report concludes "Thus the preliminary economic analysis indicates that the multi-crop thresher and axial flow pump introduced by the Ford Foundation are a valuable contribution to Egyptian agriculture from the perspective of both the private owner-operator and the institutional policy maker. An investor can achieve generous rates of return on his capital with cash flow levels which easily enable him to cover his operating and finance costs. At the same time, the machinery relieves a labor shortage at the point in the agricultural year when the farmer is attempting to harvest one crop and prepare his land for the next. It replaces in the perhaps harvest time-consuming hand methods for which there is no longer a sufficient supply of labor. In the wheat and rice harvests it may release tractors which could be more beneficially employed in seed bed preparation".

SUMMARY DESCRIPTION OF THE MULTI-CROP THRESHER-WINNOWER AND THE LOWLIFT PUMP

We have circulated to all the participants of the AAASA Conference here in Nairobi, copies of thérecently published booklet "Small Scale Machinery for the Nile Valley : Catholic Relief Services". The booklet provides a basic description of the project and its components. We conclude this paper by a brief summary of the two units already in production.

A. LOWLIFT PUMP

The diesel powered irrigation pump is a direct-coupled low lift, low head, high capacity, centrifugal pump ideally suited to conditions in Egypt. The pump is mounted on a four wheel frame that also accomodates the 10-12 hp. diesel engine, when the engine is not used for threshing. The pump, completely manufactured in Egypt, costs £ 378. This price includes a "6 by 6" pump, a four wheel frame, footvalve, suction hose and discharge pipe. The pump has a capacity in excess of 2 cusec (210 cubic meters per hour) at a total head of 3 meters (10 feet).

B. THRESHER

The axial flow multi-crop thresher-winnower (M.T.W.) is manufactured entirely in Egypt at a cost of £ 1,575. The 10-12 hp diesel engines, which are imported from Germany, have cost about £ 1,000.00 per unit CIF, Alexandria, Egypt. The engines prices have now increased to £ 1,200.00 CIF. The weight of the engine varies from 130 Kgs DEUTZ to 90 Kgs HATZ. The thresher weighs 500 Kgs and is 2 meters long, 1.7 meters wide and 2 meters high. The power take off from the engine operating at 2,200 rpm is by V-belt pulley to three main components :

1. The axial flow drum with 280 rotating cutting blades operates at 620 rpm.
2. The cleaning mechanism is composed of an oscillating screen operating at 620 one-inch strokes per minute plus two blower fans at 1,600 rpm.
3. The collecting mechanism with an auger at a slow 220 rpm and a lift fan at 800 rpm to blow the grain from the auger terminal to the bagging outlet.

Status Report - December 1979

CARE-EGYPT
High Dam Lake Integrated
Basic Services Project

The High Dam Lake Integrated Basic Services Project is a joint effort of the Ministry of Development and New Communities, represented by the High Dam Lake Development Authority, and CARE to assist organized groups meet the challenges of settling in the High Dam Lake Region. At present, activities concentrate on ameliorating the difficult living conditions of the 7,000 fishermen on the lake shore.

The shoreline is infested with scorpions and vipers. Jackals and hyenas sometimes encroach upon the fishing base camps in search of food. Fresh fruits and vegetables are rare in the diets of the fishermen and they often suffer from gastroentritis, respiratory problems, heat exhaustion/sun stroke, and eye problems.

The Basic Services Project is presently composed of four components:

1. The self-help construction of secure shelters - Within the next year, up to 20 shelters will be constructed, at fishing base camps throughout the lake region to function as models and stimulate replication among neighboring groups. Nubian sandstone and lakeside clay have been the primary construction materials used. Lakeside clay is being used for making

bricks suitable for constructing shelter vaults. A palm thatch roof was used at the Khor Mariya site which is now complete, except for doors and windows. Construction is also well underway at Khors Afia, Tomas and Soliman.

Construction costs for a base camp complex, including residential building for 20 men with work area, salted fish storage and latrine, total approximately L.E. 10,000 or $14,000.

Construction costs are primarily labor costs of using workers from the Aswan region. The fishermen themselves are providing some assistance, but mainly contribute by selling fish cathes to pay for hired labor.

2. Shoreline and settlement afforestation and encouragement of kitchen garden/small scale agricultural activities - A Tree Nursery with a capacity of 100,000 saplings is functing near the High Dam. Some 300 saplings have been planted at Khor Mariya and 4,500 saplings, also produced at the Tree Nursery, were sent to Sadat Village, Kostal and Adindan.

Diesel-powered water pumps, pipes and fittings are providing to shelter sites under the project to provide water for vegetable gardens at Khor Mariya and Afia which already have yielded tomatoes, squash, cucumbers, water melon, moulukheya, okra, and salad greens (gargeer), etc., to combat vitamin and mineral deficiencies and provide variety in the fishermen's diet.

3. Upgrading and extending the basic health care delivery system - A new project boat, "CARE 1," was delivered to the Western Harbor in December 1979. The boat contains facilities for a small clinic and laboratory. With the endorsement of the Ministry of Health and the cooperation of Aswan Governorate's Health Services Directorate, a doctor, medical technican, and first aid man were assigned to the crew and began delivery health services on the lake in January 1980. Fishermen will be trained in first aid procedures; disease prevention and environmental sanitation will be stressed, with a major emphasis being bilharzia control, and its eradication among participating groups. A number of interventions will be introduced to determine the best formula for protecting inhabitants of the Lake Region.

4. Identification and utilization of practical and appropriate equipment for cooking, agriculture, water lifting, waste disposal, maintaining acceptable comfort levels in housing, etc. - Two solar over prototypes were fabricated in July 1979 under the direction of Professor Thomas Bowman of the Florida Institute of Technology. Further work and testing is taking place to develop an economical unit suitable for mass production and use by fishermen and other settlers.

Construction is in its final stages on an experimental solar building at the Tree Nursery Site. The building, designed by Professor Arthur Bowen of the University of Miami, will test and demonstrate a number of non-mechanical

systems for solar cooling and heating of building interiors. A traditional sandstone and mud mortar prototype building with mud brick vaults and domes has also been constructed to be used as the tree nursery office.

In addition to regular CARE donor funding and the financial participation of the High Dam Lake Development Authority and the fishermen themselves, the United States Agency for International Development is providing major support through CARE, for the shelter and afforestation/agricultural activities components during the present stage of implementation.