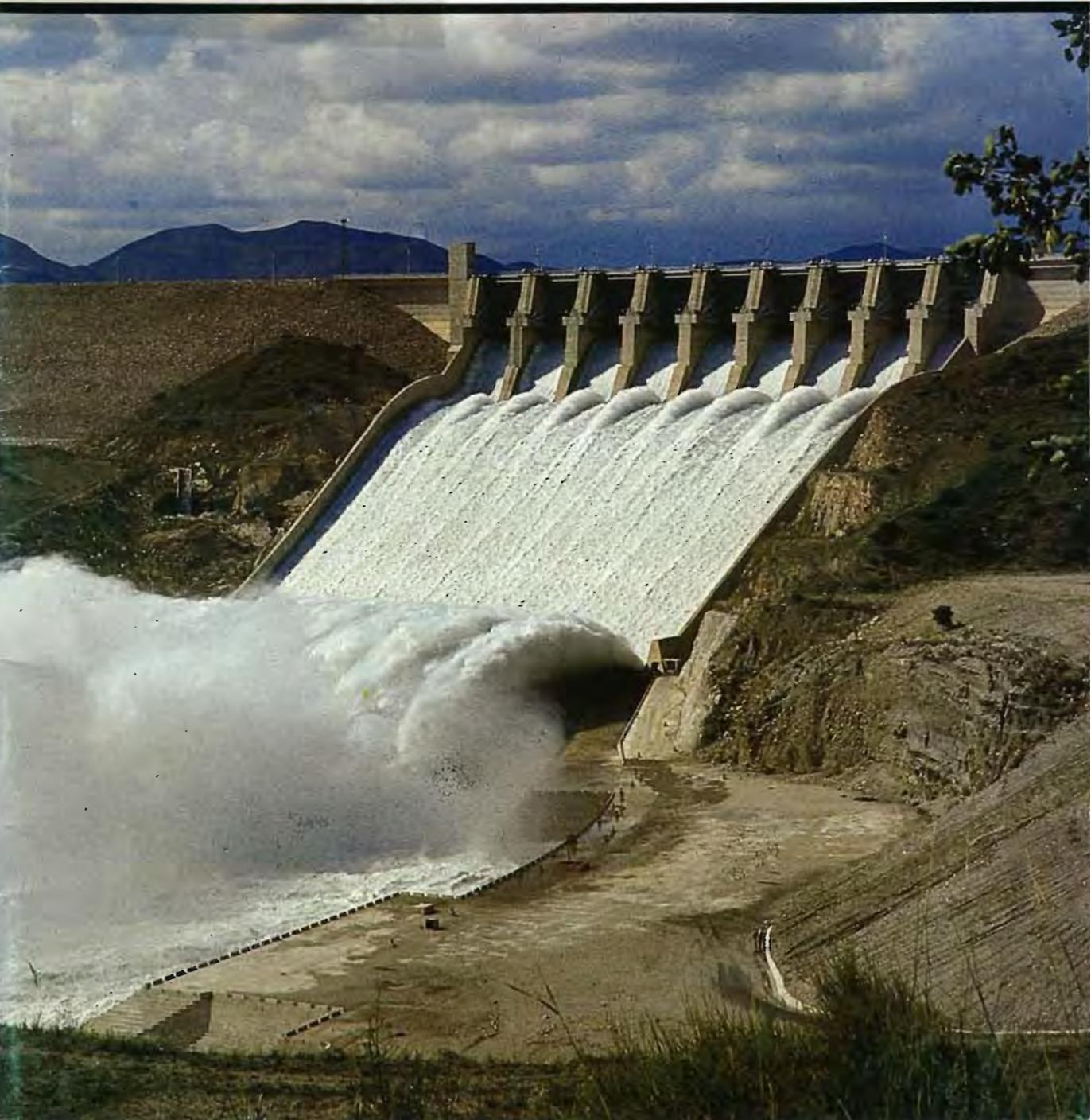


Forward
together

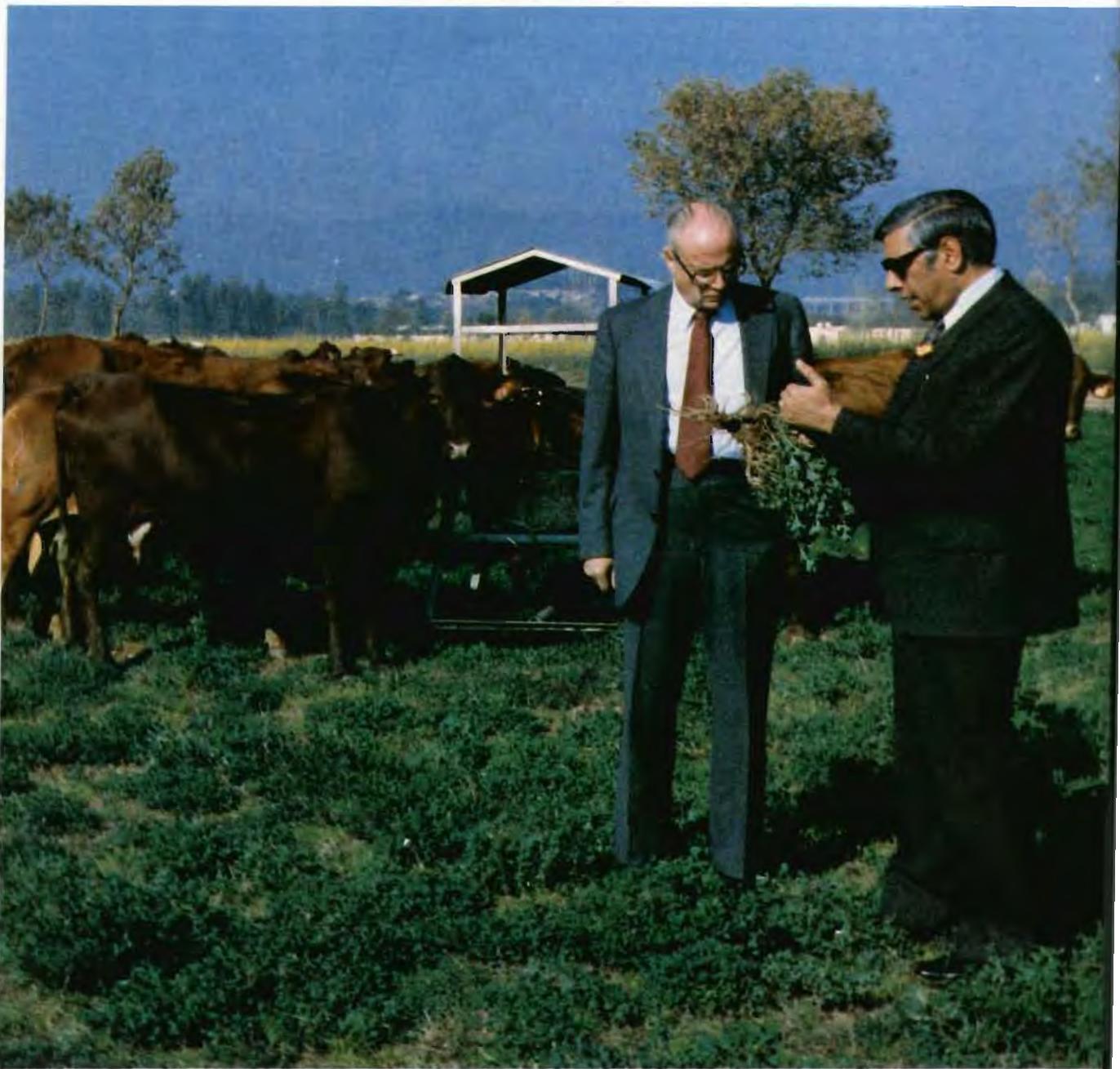
United States Economic Aid to Pakistan





Forward Together

U.S. Economic Aid to Pakistan



Chairman of the Pakistan Agriculture Research Council Dr. Amir Khan (right) and U.S. Ambassador Deane R. Hinton discussing high-nutrient-fodder crop for cattle raised at the experimental field of the Pakistan Agricultural Research Center in Islamabad.

TO THE PEOPLE AND GOVERNMENT OF PAKISTAN:

This booklet is, if you will, a report on one chapter in the long-term partnership between our two nations. On behalf of the American partners, I am pleased to share this report with you, particularly since I take great pride and interest in the \$1.625-billion American economic assistance package to Pakistan.

Spanning the period from 1982 through 1987, our current multi-year program takes the era of U.S.-Pakistan economic cooperation well past the 30-year mark. It underscores the depth and breadth of our mutual concerns and cooperation for economic and social development.

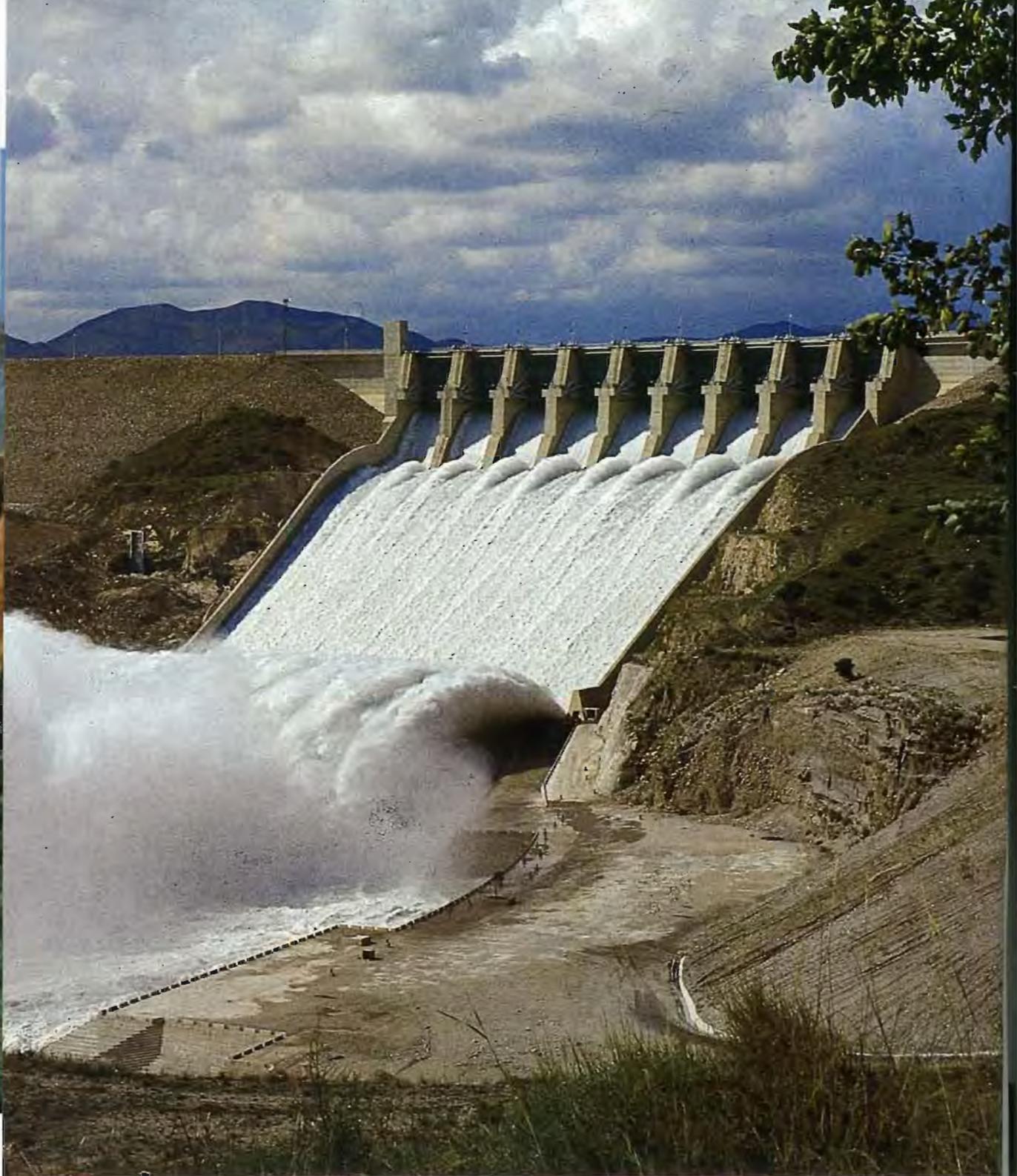
The United States Government approaches economic assistance in a spirit that I am sure most citizens of Pakistan will find congenial. We start with the assumption that nations chart their own course to development, that the principal tools for development are sound policies promulgated by the developing countries themselves, and that resources (whether foreign or domestic) will produce the greatest development results when, and only when, they are accompanied by sound policies and effective implementation of those policies.

The current six-year program was launched in 1981, a time when Pakistan was reevaluating and reformulating important economic policies. Together, the United States and Pakistan Governments quickly identified collaborative projects Pakistan needed to realize its full agricultural potential and to capture the full benefits of Pakistan's vast irrigation system. We also found important common goals in the energy sector, where Pakistan seeks to meet its energy needs of the 1990s and beyond and to put power generation on a self-financing basis while increasing the efficiency of all elements of the national grid.

The long-term social and economic development of Pakistan depends upon Pakistan. We and your other friends can help, are helping, and intend to continue to help with resources and ideas that as an independent sovereign country you are free to use, modify, or reject. The future of Pakistan is in your hands.



Deane R. Hinton
Ambassador of the
United States of America



Tarbela Dam, the world's largest earth-filled dam. The United States financed half the dam's building costs and supplied numerous engineering experts during construction.

A Thirty-Year Partnership

The United States of America has been a partner in Pakistan's economic development since 1951, when it first brought U.S. agricultural and industrial experts to Pakistan and sent 90 Pakistanis to the United States for training in modern agricultural methods. Since then, U.S. aid to Pakistan has increased enormously, underscoring America's commitment to improving Pakistan's overall economy and the everyday lives of its citizens.

In the early years of U.S.–Pakistani economic cooperation, much of America's aid to the new nation went to relieving famine and to improving living conditions for the millions of refugees. By the mid-1950s, however, Pakistan was ready to focus on capital projects as well as on improvement of life. Between 1954 and 1958, the United States provided more than \$600 million to help Pakistan repair water works, rehabilitate the railway, expand its sewage system, and build a needed fertilizer factory.

At the same time, the United States provided considerable technical assistance for such projects as ground water surveys and education in medicine, modern management, and agriculture.

In the 1960s this aid continued to grow: between 1959 and 1968, the United States sent Pakistan almost \$3 billion. In fact, in the course of Pakistan's Second Five-Year Plan (1960–1965), America provided more than half of all Pakistan's foreign aid and covered 35 percent of the government's development expenditures and 45 percent of its import bill. Projects included extensive rehabilitation and expansion of Pakistan's power, transportation, and communication networks; agricultural development of one million acres of the Indus Plain; and establishment of an agricultural university.

War between India and Pakistan interrupted Pakistan's economic development programs in 1971. But by 1973, the United States was again providing significant economic aid, particularly (though far from exclusively) for agriculture. Its efforts to increase the supply and use of fertilizer played a large part in almost doubling

Pakistan's wheat production between 1971 and 1981. Other projects during this decade aimed to control malaria and to promote sanitation and health in rural areas.

These and other efforts have brought considerable change to Pakistan. But much remains to be done. Therefore in 1981 the United States approved a major \$1.625-billion economic aid package for 1982 to 1987 to help Pakistan meet the challenges outlined in its comprehensive Sixth Five-Year Plan (1983-1988). The package is administered by the U.S. Agency for International Development (USAID) in cooperation with the Government of Pakistan. Specifically, Pakistan and America will focus on :

- Raising agricultural yields, rehabilitating and modernizing Pakistan's irrigation system; and strengthening Pakistan's agricultural research network.
- Tapping Pakistan's coal and other indigenous energy resources, developing new sources of renewable energy, and making all energy systems more efficient.
- Bringing electricity to rural villages.
- Developing forest lands for timber and fuel.
- Supporting Pakistan's population programs.
- Promoting development and eradicating opium production by fostering viable economic systems in poppy-growing areas.
- Strengthening Pakistan's balance of payments with fast-disbursing assistance.
- Slashing the incidence of malaria throughout the country.
- Bringing new development and better living conditions to the people of Baluchistan and the North West Frontier Province.

In all of these efforts, the United States and Pakistan are placing special emphasis on making the programs self-sustaining by securely institutionalizing the management and technical skills that will ensure them long, fruitful lives.

The following pages outline this new, ambitious aid package that America and Pakistan are undertaking together to meet the challenges of the 1980s and beyond.



Dockmen unload cranes USAID sent Pakistan to clear old and build new irrigation canals.

Agriculture

Agriculture is the largest single sector of Pakistan's economy. It employs more than half the country's work force and contributes almost one-third its Gross Domestic Product. Major Pakistani industries, such as textiles and sugar refining, and smaller enterprises both depend on the nation's farms for their raw materials. And agricultural exports generate half of Pakistan's export earnings.

Impressive as these figures are, agriculture could contribute much more to Pakistan's economy: yields in Pakistan are among the lowest in the developing world. To help Pakistan realize its tremendous agricultural potential, the U.S. assistance program will:

- Increase food production by improving agricultural research, education, and extension services to farmers; providing needed agricultural supplies and equipment; and upgrading irrigation systems throughout the country.
- Improve Pakistan's food security by upgrading agricultural data collection and policy analysis and by improving crop storage facilities.
- Introduce "tree farming" on underused rural lands to provide rural and urban dwellers inexpensive wood fuel, fodder, and other tree products without further depleting Pakistan's forests.

All these efforts are priorities of the Sixth Five-Year Plan, which aims to develop Pakistan's immense agricultural potential and create a dynamic agricultural export industry.

Food Production

Increasing the productivity of Pakistan's farms will require better farming research and education, better fertilizers and equipment, and more dependable irrigation systems. USAID will assist Pakistan to tackle all these needs.

Research and Education. In the past, the research contribution of existing institutions has been fragmented and diffused because of poor research planning, few career incentives, and unreliable information flow. To overcome these

hindrances, teams of Pakistani specialists will analyze such problems as how agricultural research topics are approved, how projects are conducted and financed, and how the results are disseminated. The teams then will help make the appropriate changes in research practices. American-funded advisors will also help develop education and skill development programs and career development courses to train and motivate agricultural researchers.

These organizational problems have not kept Pakistan from improving numerous agricultural production technologies. But often results are released in forms unintelligible to farmers. Simplifying the presentation and gearing publications more to the intended audience can do much to help put research findings into practice. USAID will therefore build, then recruit and train staff for a fully equipped multi-media studio to create documentaries, training tapes, and other programs in styles appropriate to various audiences. The program will also provide multi-media displays, mounted in two vans, to take information straight to the farming villages.

Even as the program works on overall research techniques, it will also focus on individual agricultural problems. Despite impressive increases in maize and wheat production, for instance, a large gap continues to exist between potential and actual production. USAID and Pakistan's Nationally Coordinated Wheat and Maize Programs will investigate why this is so and seek to increase production of these important crops.

Two particular areas have special research and education needs: Baluchistan and the North West Frontier Province. To significantly increase overall yields in Pakistan, these provinces must work up to their full potential.

The Arid Zone Research Institute in Quetta is investigating ways to increase crop production in dry, high-altitude areas like Baluchistan. But the institute's staff needs more training, supplies, and equipment. Technical assistance, in-country and overseas training, and commodity support will give the institute a sound base from which to

upgrade Baluchistan's agriculture.

Although agriculture dominates the North West Frontier Province's economy, most yields there fall below the national average. Education and improved technology could substantially improve these yields, but they are hindered by too few well-trained agriculturalists and a lack of institutional interest in farmers' individual problems.

To change this, a project has been started to help the NWFP Agricultural University at Peshawar and the province's various research programs create a modern, integrated system oriented toward solving regional farming problems. At the university, USAID will give faculty members and research staff advanced training in their specialties and in new teaching techniques. It will also update the university's curriculum and improve and expand the campus. And American experts will help the university establish a strong extension program that will focus on individual farmers'

needs and problems. This entire process will take a decade or more, but it will substantially improve the province's agricultural production and quality of life.

Fertilizer and Equipment. Education can produce little unless farmers have the supplies to put their learning to work. While Pakistan produces sufficient nitrogen-based fertilizer for its needs, it must import most of its phosphatic fertilizers. USAID has therefore already financed the importation of 130,000 metric tons of diammonium phosphate (DAP) and 10,500 metric tons of triple super phosphate (TSP). For the 1984 crop year, this project supplied 94,000 metric tons of DAP and 24,000 metric tons of TSP—respectively one-fourth and one-half Pakistan's total annual requirement for these fertilizers. Similar amounts will be provided in the 1985 and 1986 crop years.

Private firms—manufacturers, processors, distributors, importers, and traders—have a role to play in developing the country's agriculture. In fact, increasing such involvement is an important goal of the Sixth Five-Year Plan. Therefore, in 1984 the United States provided \$10 million to help private corporations import agricultural machinery and equipment (tractors, irrigation and food processing equipment, etc.) for sale and use in Pakistan. If the demand for these funds warrants it, this amount may be increased in future years.

Irrigation. Even the best equipment cannot help fields without water. In Pakistan, yields per acre (a measure of the productivity of water in the system) are low. For many crops, average yields are less than those achieved by other countries under rainfed conditions. Frequently farmers cannot get all the water they need when they need it.

To ensure a dependable, well-managed water supply, USAID is moving in several directions. First, it is helping the Government of Pakistan finance the rehabilitation and maintenance of 8,400 miles of canals and 2,100 miles of drains—about 30 percent of all Pakistan's canals and drains. To do this, it is also providing to Pakistan's



USAID will provide Pakistan 118,000 metric tons of phosphate fertilizer each year through at least 1986.



Many existing irrigation waterways (left) are mere ditches whose flow is difficult to control. New waterways (center) will not erode, do not waste water, and allow more precise irrigation control.

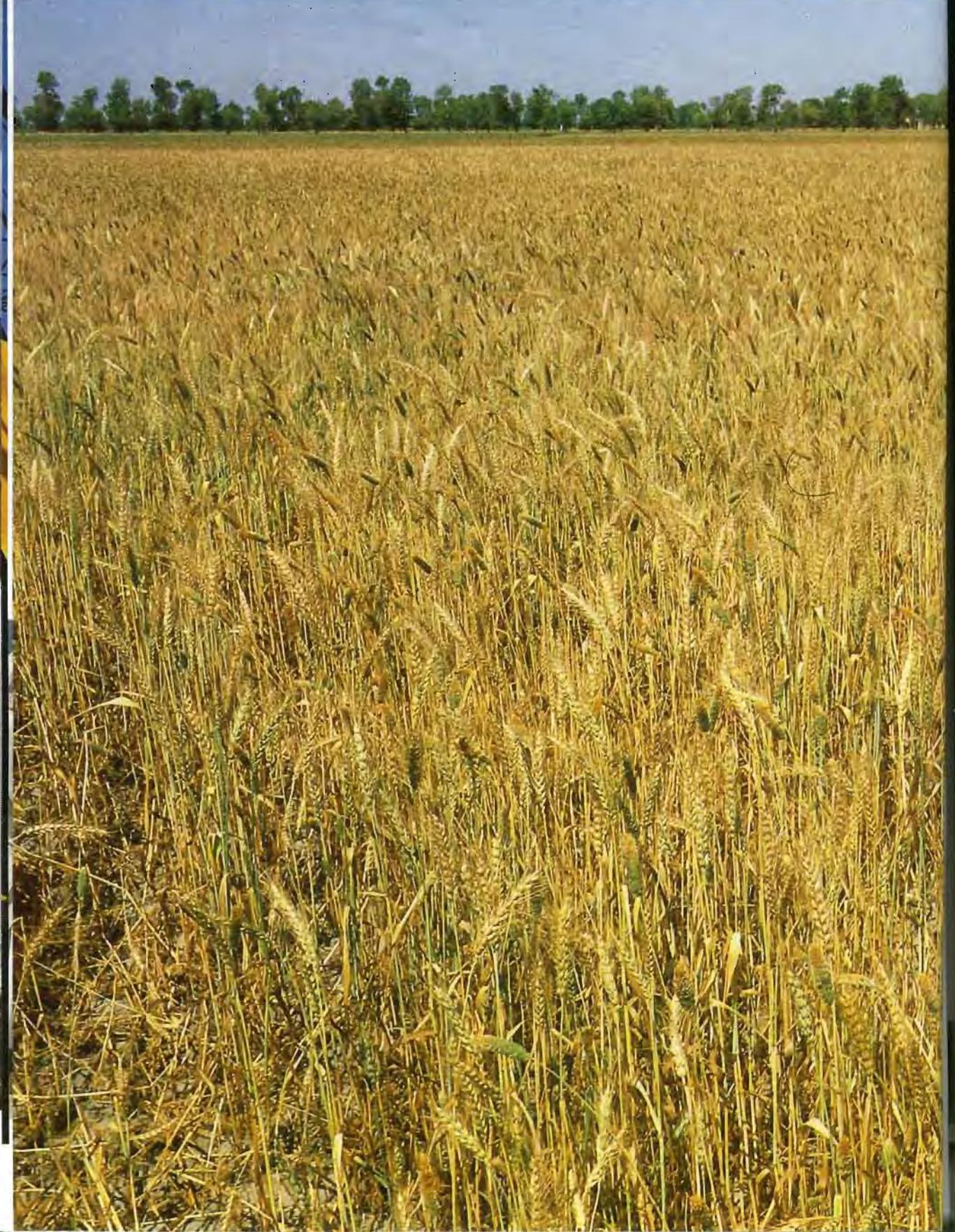
provincial irrigation departments earthmoving and other equipment (about 2,500 different items worth a total of \$53.5 million) to fix, operate, and maintain the canals. In the improvement process, American advisors will help Pakistani staff design civil works projects, maintain and operate equipment, and attain other necessary skills.

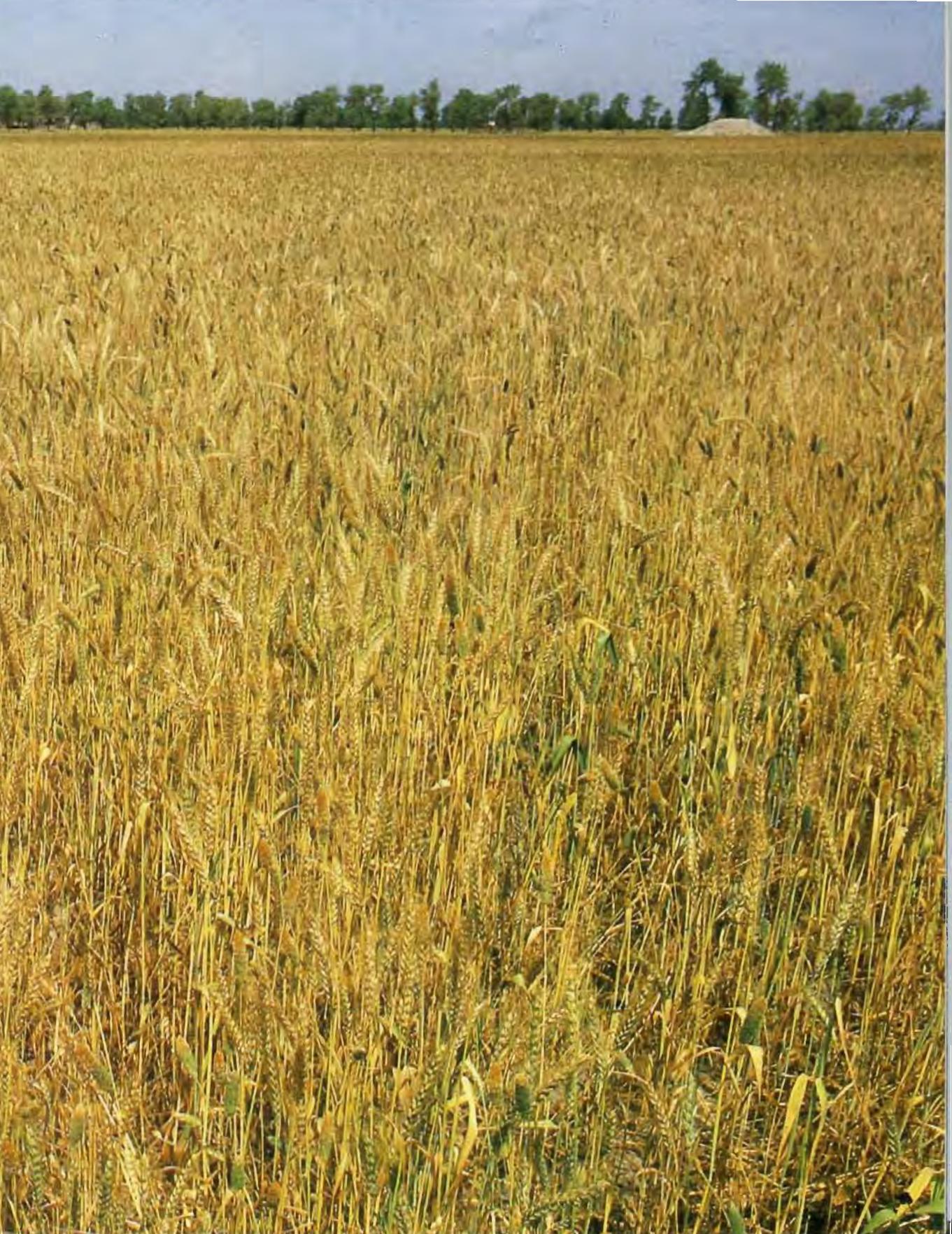
Second it is helping improve overall institutional management skills at both the federal and provincial levels. Officials of the organizations responsible for planning, operating, and maintaining the world's largest irrigation system are well trained and technically competent. But their effectiveness has been constrained by outmoded management techniques. To remedy this, provincial irrigation departments will be provided substantial management training and be helped to establish a management information system to generate and disseminate information needed to make management decisions. At the federal level, USAID will help the Water and Power Development Authority (WAPDA) coordinate water policies and storage supplies. This assistance will include expanding and applying a water management computer modeling system to monitor total water supplies and scheduled distribution.

Third, U.S. assistance will focus on water planning and research. It will help provincial irrigation departments plan water projects that will answer future needs. And it will help WAPDA transform approved new policy guidelines into action.

The size and complexity of the Indus irrigation system preclude the simple transfer of current technology to Pakistan's canals without research. USAID will therefore help the nation's research organizations investigate both technical and management improvements to the system. At the same time, another project will study the unique water problems of areas outside this system (including much of western Pakistan) and fund relatively small, isolated projects for farmers too far from established watercourses to tap that source of water. It will also research such promising ideas as "sailaba" farming—using flood waters for irrigation.

Most of these irrigation efforts are centered on government. It has long been clear, however, that to repair and maintain a system as large as Pakistan's the government must rely heavily on the farmers themselves. In 1976, a USAID pilot project started teaching farmers how to improve watercourses, the small canals that feed their





fields. By the end of 1981, the project had improved 1,300 watercourses, precisely leveled 75,000 acres of land to improve water use, and established at least 50 field teams and 80 water users associations to keep these efforts going.

This innovative program has since been copied by many international development organizations around the world. Its success has led USAID to commit another \$10 million to the project, this time concentrating primarily on institutional and manpower development. Expert technical advisors are helping provincial and federal managers of the watercourse program improve their skills, technology, and quality control. The project is also studying what role local councils could play in delivering water management services. As it does so, it continues to improve more watercourses and to establish water users associations.

Food Security

Pakistan's growing population is consuming more of the nation's food even as the government hopes to build crop surpluses for increased exports. At the same time, considerable amounts of food are eaten by pests during storage. To plan the food and production required to answer these growing needs and to protect crops once they are harvested, Pakistan needs to improve its food management and planning practices and build better storage facilities.

*(Shown on previous pages 10 & 11)
USAID food security assistance will help Pakistan plan its wheat and other crops to meet its growing food needs.*

Doing this will first and foremost require reliable, up-to-date crop data and sound economic and policy analysis based on those data. USAID will therefore help modify the existing statistics collection system to make it more accurate and efficient, and work with the Government of Pakistan to establish a new Economic Analysis Network, bringing together public, private, and quasi-autonomous institutions in a semi-formal association. Such a network will help federal agencies acquire the analyses they need to make decisions and will increase the capacity of Pakistan's institutions to conduct these analyses.

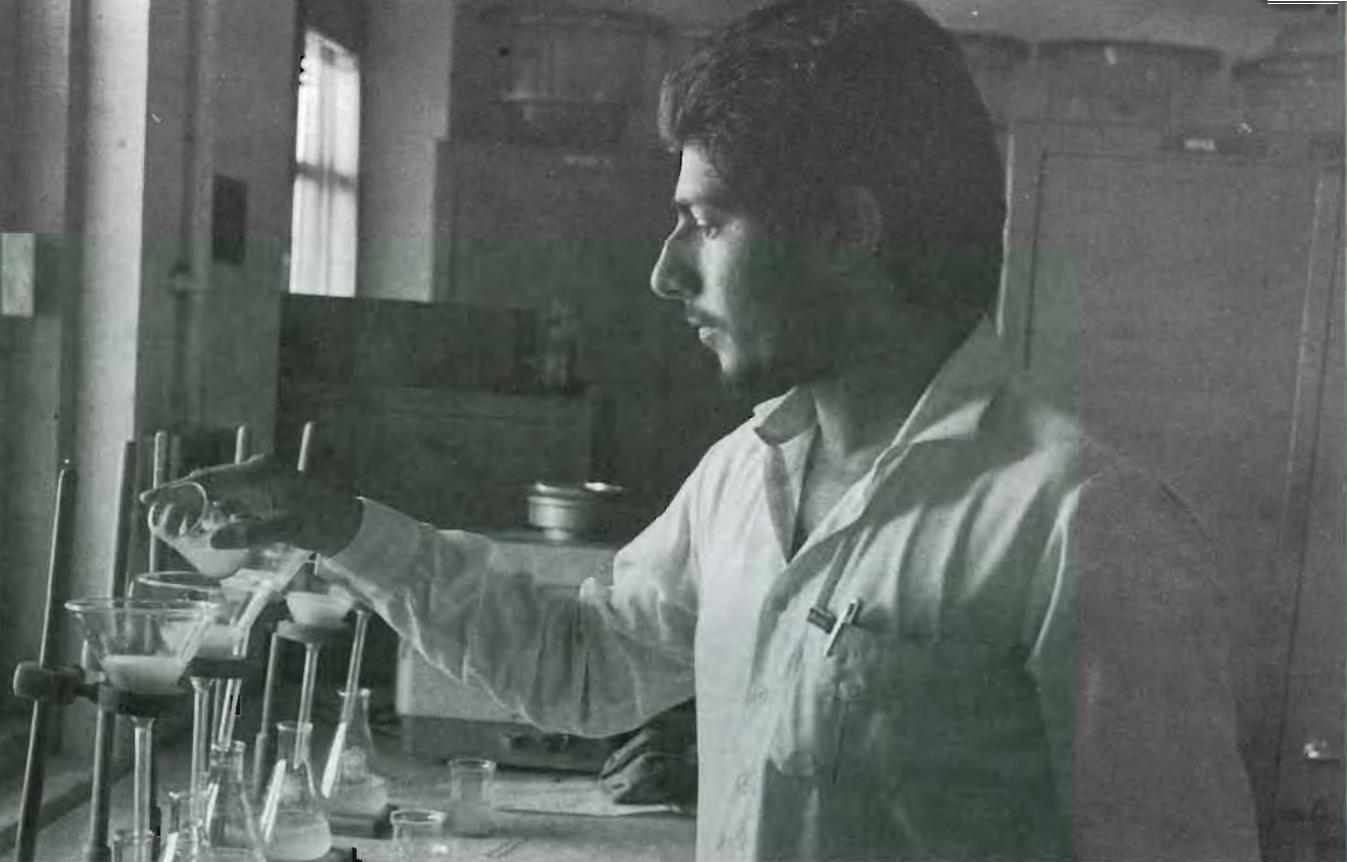
Food loss at Pakistan's public storage bins is four to five times the average in other countries. Both management and buildings need updating. U.S. advisors will teach facility managers better quality and inventory control, financial and cost accounting, operation and management of the physical plant, and employee management. Other workers will also receive appropriate training. Meanwhile, USAID will rehabilitate storage facilities for 750,000 tons of grain and will develop a more effective pesticide program for each storage bin.

Tree Farming

Many Pakistanis, both urban and rural, depend on trees as a source of fuel, fodder, and small, everyday timber products. But the nation's forest lands cannot supply even the current demand; the country is consuming its scarce timber faster than it can grow new trees.

One answer is "tree farming," a plan that will show farmers how to produce wood fuel and timber products—for themselves and for market—on their underused farm land. The Pakistan program will take a three-pronged approach.

First, the program will focus on institutional development. It will help the federal Office of the Inspector General of Forests prepare a national forestry development plan to motivate, organize, and coordinate provincial tree farming efforts. Similar planning and management guidance to the provincial forestry departments will allow the departments to develop and execute all their



A technician at the Pakistan Forest Institute does research on a forestry problem. USAID assistance will help the institute broaden its research programs.

programs, including tree farming. And technical advisors will help the Pakistan Forest Institute develop curricula in such vital areas as growing trees with other crops for maximum productivity and managing farm resources efficiently.

Second, it will give new direction to Pakistan's forestry research. Together, the Pakistan Agricultural Research Council, the Pakistan Forest Institute, and USAID will investigate the economics of tree farming and the design and yield of farm forestry systems. They will also increase the selection and testing of seeds for multi-purpose, fast-growing tree species for introduction into Pakistan. Such research will increase farmers' acceptance of the tree farming principle.

Finally, the program will test in the field the technical and social feasibility of growing trees as crops on private farmland in Pakistan. U.S. advisors will initiate programs to get farmers interested in growing trees and will give them on-the-job training. The program will also help establish privately owned seedling nurseries to produce and sell

planting stock for farm fuelwood.

The Government of Pakistan and USAID have selected four areas for these field activities: two highly degraded, rainfed districts (one each in NWFP and Punjab); irrigated farmland in Baluchistan, Pakistan's least forested province; and irrigated forest plantations in Sind, which will be expanded and improved to produce more wood for both Sind and Baluchistan.

These tree farming initiatives, it is hoped, will make 18,000 farm families self-sufficient in firewood and increase farmers' fodder supplies for livestock. Such activities will also help these families substitute firewood for dung as cooking and heating fuel, freeing the dung for use as fertilizer.

Watercourses--The Farmers' Lifelines

Interview with Mushtaq Ahmad Gill, Director, Farm Water Management Training Institute, Punjab.

Repairing Watercourses

After Pakistan signed the Indus Basin Treaty in 1960, the United States helped us make detailed studies of the Indus basin's irrigation system. We learned that our watercourses were losing far too much water.

Let me give you a picture of this. Sixty million acre-feet of water were available at the head of the irrigation system, and tubewells pumped in 33 million more. But 37 million acre-feet—almost 40 percent—of this water were being lost in the watercourses. We were maintaining the main canals, the reservoirs, and the other structures, but the century-old watercourses were being maintained by the farmers. They were filled with silt, overgrown with vegetation, and full of bends and kinks. In addition, many of the fields being irrigated were unleveled or very small.

Two USAID projects in the mid-1970s helped us to study both these problems of poor watercourses and uneven land. This assistance gave us the data we needed to plan our strategy. Soon after, USAID funded a pilot on-farm water management project. Through it, we improved 1,080 watercourses in Punjab, each averaging three miles. We saved 250,000 acre-feet of water—enough to irrigate another 250,000 acres of land. The entire project was supposed to take six years, but the farmers so supported the program that it was recently completed a full year ahead of schedule.

The United States was the pioneer in this huge program. Only when the pilot project was

complete did other agencies come in.

We are now working to upgrade the rest of the country's 89,000 watercourses, 54,000 of which are here in Punjab. The worst watercourses will receive "maximum" engineering, including partial brick linings. The better watercourses will be cleaned and maintained, with our guidance, by the new water users associations, which were founded under this whole program. They will remove the silt and weeds and put structures at important places.

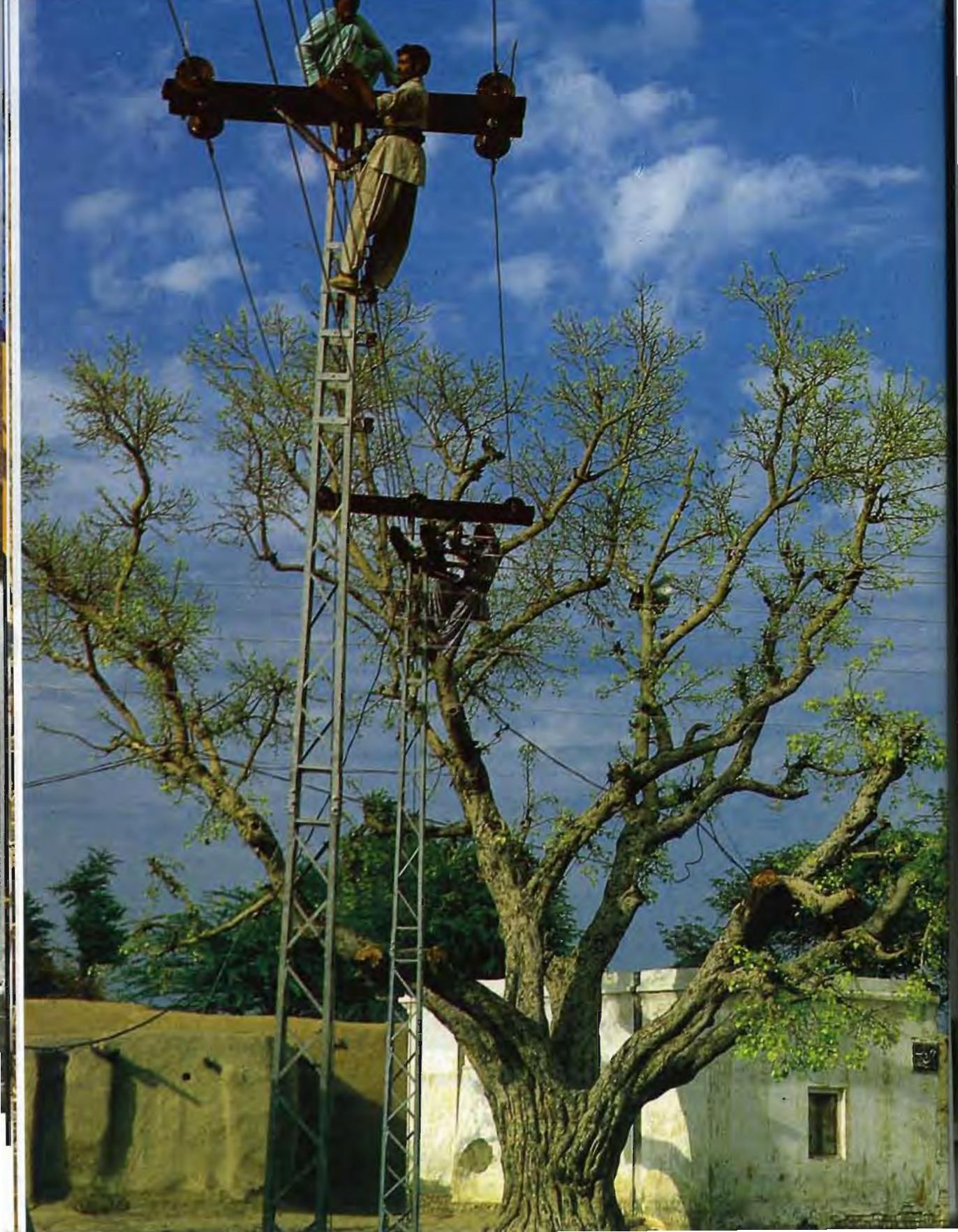
This program has brought other benefits besides saved water. The water users associations have helped settle many disputes between the users of each watercourse, and they have helped get the farmers organized.

Better Skills

For any project to succeed, you must have an effective team of good, well-trained, well-educated, well-experienced people. U.S. technical assistance has strengthened our water management skills through a "training of trainers" program. USAID has provided both in-country and out-of-country training for agricultural professionals and professors, who in turn will train others. Field personnel—graduates of polytechnic institutes and field assistants of our extension service—also receive instruction, which they in turn pass on to farmers. In the five years of the pilot program, over 2,000 people were trained. This valuable assistance is continuing.



A farmer and his new USAID-funded watercourse.



Energy

Pakistan's per capita consumption of commercial energy is one-tenth the world's average and about half that of other developing countries. Nevertheless, petroleum products constitute a full fourth of Pakistan's imports, even as half the nation's energy demand is being met by wood, cow dung, and straw.

To develop its economy and better the lives of its citizens, Pakistan must use more energy. To do this economically, it must develop more indigenous energy sources.

Pakistan's Sixth Five-Year Plan commits nearly one-third of its almost \$30-billion outlay to the nation's energy needs. Among the plan's basic objectives:

- Institutionalize long-term energy analysis, planning, monitoring, and evaluation.
- Reduce oil imports by developing current energy resources and intensifying the search for new, indigenous power sources, especially renewable sources.
- Institute broad conservation measures.
- Electrify Pakistan's rural villages.

The U.S.-assisted program will help Pakistan achieve these objectives by improving the structure of the country's energy institutions and by providing loans, grants, technical assistance, and training facilities in four areas: overall energy planning, development of coal and other indigenous resources, rural electrification, and modernization of energy equipment.

Energy Planning

Responsibility for energy analysis is now scattered among numerous government organizations, making it difficult for Pakistan to produce integrated energy plans. To remedy this, USAID will help establish an Energy Analysis Group—professional analysts trained in integrated energy analysis methods—within the Ministry of Planning and Development. Once trained in both in-country and overseas courses, members of the group

will collect detailed statistics on energy reserves and production rates; energy systems' performance costs and manpower needs; energy demands of various economic sectors; trade, tax, interest, and duty costs; and many other areas. They will then analyze all these varied statistics and offer their conclusions to Pakistan's key policy makers. The program will underwrite the costs of the group's formation and initial activities.

USAID will also provide the necessary computers and software needed to support this massive data collection and analysis effort. And it will help the government undertake special analytical studies, technology assessments, project pre-feasibility studies, and resource evaluations.

Coal and Other Resources

Coal. USAID assistance to develop Pakistan's coal reserves will take several tacks. First, it will help the Geological Survey of Pakistan (GSP) assess the extent and quality of the nation's coal reserves. Where possible, the United States will refurbish GSP's drill rigs and provide some new rigs to allow deeper exploratory drilling.

With this assistance, GSP will establish a new geodata center to collect and store technical information on field surveys, mine structures, and coal quality. USAID will provide the necessary computer technology and will train the GSP staff in coal resource assessment, methodology, geochemical characterization, geophysical logging, data management, and satellite data collection.

Second, USAID has underwritten a study of the feasibility of opening mines in the Lakhra coal field and financing Pakistan's first large, coal-fired power plant at nearby Jamshoro. (This project is one of the Sixth Five-Year Plan's highest priorities.) If the mines and plant prove feasible, American technical experts will supervise the construction and initial operation of the mines and will train Pakistani engineers in mine design, construction, and operation. The program will also train Pakistani mine engineers to use and maintain modern coal extraction and mine transportation equipment, including drills, loaders, conveyors, roof supports,

Workers in the Lakhra coal fields drill to test quality and quantity of coal. USAID is providing equipment and technical experts.



ventilators, and other necessary technical equipment for the mines. Once underway, the mines, which will be partly owned and operated by private companies, would produce approximately 1.4 million tons of coal each year.

At Jamshoro, the program will provide the engineering assistance and training to operate the 300-megawatt, coal-fired power plant and its adjunct service and office buildings. USAID may also supply the boiler and other equipment for the plant. Coal mined at Lakhra would thus supply power to much of southern Pakistan and allow electrification of many villages.

Finally, assistance will be provided to help Pakistan introduce coal briquettes as a substitute for firewood in home heating and cooking. Analysts will test the country's coal for its briquetting possibilities and, if the tests prove successful, will conduct market studies and design and install a pilot briquetting plant. A 25-ton-per-day plant at Lakhra could supply enough briquettes for the daily needs of 4,500 families.

Renewable Energy. Pakistan has helped pioneer the development of several renewable energy technologies, especially solar and water power techniques and biogas generators. While it has clearly demonstrated the technical feasibility of these technologies, Pakistan still lacks a clear idea of how they might best fit into the nation's future energy supply.

The primary hurdle to using these technologies in Pakistan may be fitting them into the daily practices and finances of their potential users. USAID will help evaluate exactly what these hurdles are and undertake to overcome them. It will particularly focus on directly informing potential users of the availability and benefits of the technology and on involving the private sector in marketing. The U.S. will also finance several renewable-energy demonstration projects.

Conservation. A vigorous industrial energy conservation program could save 10 to 15 percent of the nation's gas and electricity. Conservation is, in fact, Pakistan's most promising option for reliev-



Increased electricity supplies will mean more tubewells for arid areas.

ing the short-term imbalance between supply and overall demand.

To help the nation's major industries conserve energy, analysts will conduct numerous "energy audits"—studies of individual plants' energy use and how it can be reduced. Pakistani auditors will receive on-the-job training from their American counterparts in the course of performing these audits. Once compiled, the data from these studies will show the industrial energy consumption patterns by fuel type, function, and temperature. This important information is not currently available in Pakistan.

Under this program, U.S. advisors will help prepare short courses in energy conservation for industrial operations managers, ministry personnel, and private consultants. It will also fund several demonstration conservation projects.

Rural Electrification

Two-thirds of the country's villages are now without electric power. The Sixth Five-Year Plan hopes to bring electricity to most of them, but the government needs assistance to do this.

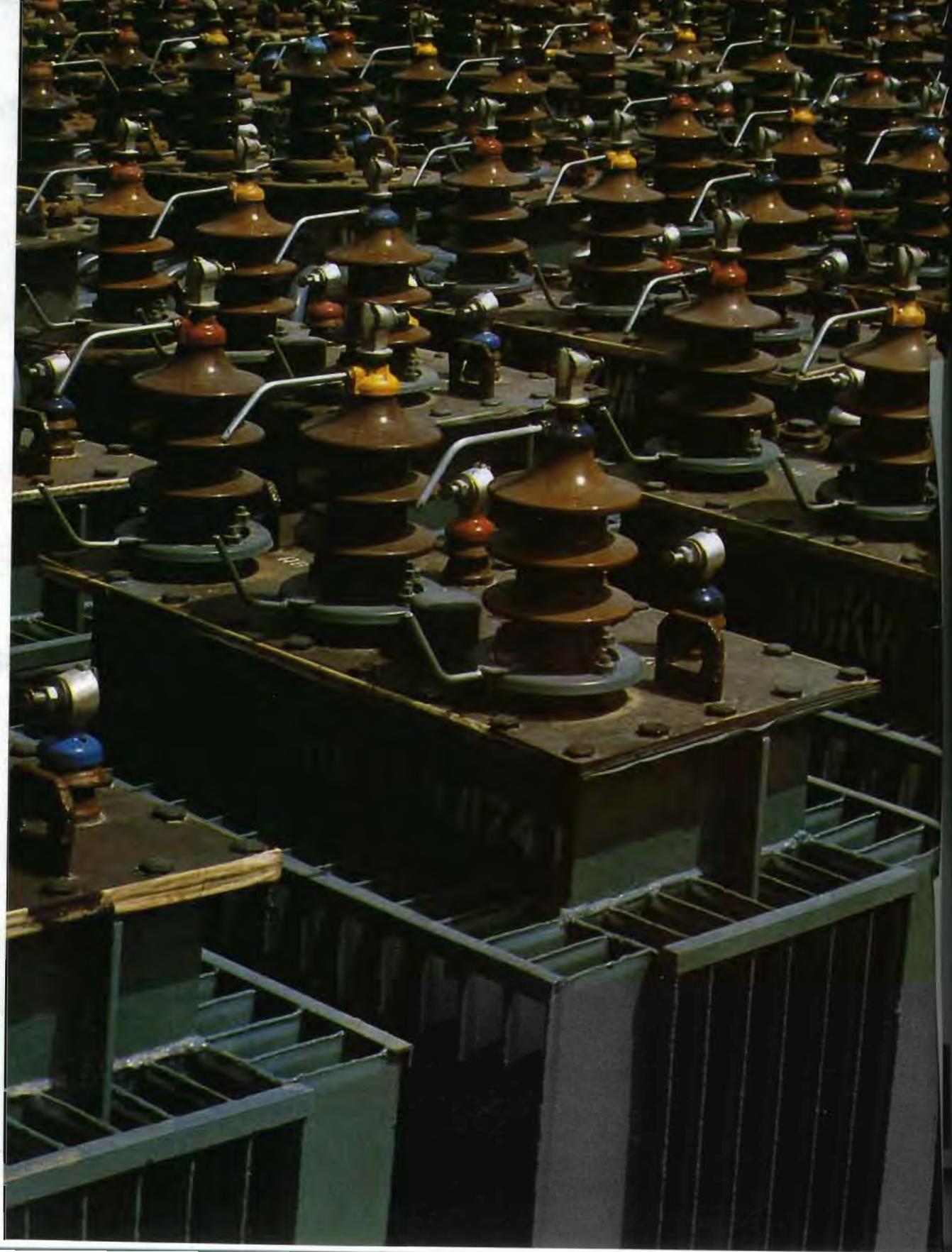
The most obvious barrier to electrification is insufficient electric power generation. In addition to building the coal-fired power plant at Lakhra, a USAID-supported project will provide all the technical assistance for the Guddu Combined Cycle Gas Turbine Power Plant. It will also provide \$52 million—about one quarter—of the plant's

total foreign exchange needs. When commissioned in late 1985, the Guddu plant will add 450 megawatts to the national grid, enabling WAPDA to launch its National Rural Electrification Master Plan.

But other, less obvious bottlenecks also obstruct electrification. Lack of trained staff, inadequate career advancement incentives, defective staff selection procedures, the growing backlog of power service applications, energy losses from overloaded distribution systems, lack of proper metering, and pilferage all bleed the nation's electricity system. Each year, almost a third of Pakistan's generated electricity is lost before reaching paying customers.

To attack a full range of efficiency and distribution problems, a Technical Assistance Team (TAT) of American and Pakistani experts will work closely with senior and mid-level WAPDA managers. Among other tasks, the TAT will help WAPDA design the National Rural Electrification Master Plan and a thorough energy loss reduction program. It will also advise WAPDA on customer services, collection and analysis of statistics, and staffing and administrative policies.

Besides backing the TAT in all its endeavors, USAID will help WAPDA develop a comprehensive training program that will provide short- and long-term technical training, literacy training, aptitude testing, and a special career development and incentive program to recruit and retain key



Energy -- Key to Pakistan's Future

Interview with Lt. Gen. Ghulam Safdar Butt, Chairman of the Water and Power Development Authority.

Coal: No. 1 Priority

Pakistan has few indigenous sources of energy. Developing Pakistan's coal is therefore our number one priority. Unfortunately, our coal has a high sulphur content. I sought help in developing coal from many countries, but the United States was the first to come forward with a definite, positive proposal.

USAID is helping us develop coal mines, which are in a very primitive stage in this country, and build a 300-megawatt, coal-fired power plant. This is a major breakthrough. It will be an incentive to locate more coal and use it for other industrial purposes. So we are breaking into a new technology whose impact will be very great.

Electricity to the Villages

Bringing electricity to the villages is also a high priority. Already I can see the difference when I go to rural areas: where there is power, I see people looking up to a better life.

The impact of electricity has been greatest in Baluchistan. Electric power has brought tubewells, a dependable water source. USAID is putting money in these areas as well as in other agencies, and this is producing very positive change.

Of course, we are handicapped in our efforts to electrify all Pakistan's villages. We do not have enough electric power because we do not have enough money to build and run the

necessary power plants. Here again USAID has come out very generously. We now expect that 80 percent of the population will have electricity by the end of the Sixth Five-Year Plan.

Some villages way out in the desert or up in the mountains will always be beyond the reach of major power plants. For these villages, we would like to build small hydropower and solar power stations. USAID is helping with these projects, too.

Training for the Future

At bottom, the performance of any organization depends on the quality of its personnel. Training improves not only skills, but also morale, dedication, and pride in work.

USAID consultants have helped us identify important areas we have missed. These courses cannot train all WAPDA's employees. But some of the students in the classes will become instructors, who in turn will train other WAPDA workers.

Finally, we will receive considerable assistance from our "sister utility," the Tennessee Valley Authority, one of America's largest utilities. Chief TVA officials will come to WAPDA and advise us on more efficient management and operations techniques.

In past years, and especially recently, WAPDA has grown so fast that it has lost some of its efficiency. This instruction will help us better serve the energy needs of a growing Pakistan.



personnel. USAID and WAPDA will also establish a separate Central Power Distribution Training Institute dedicated solely to improving distribution skills. This will complement existing programs providing generation and transmission training. The fully equipped institute will house computers, conference areas, a cafeteria, and staff housing.

A "Sister Utility" program will enhance the training programs. WAPDA and American electric utilities will exchange staff, allowing a trade of information and ideas on how to organize and manage electricity distribution most efficiently. By the end of the total training project, almost 29,000 Pakistanis will have improved their electrical distribution and operation skills.

To reduce further the heavy energy losses incurred in the distribution system, the project will buy tools, measuring instruments, connectors, capacitors, and similar vital equipment. And it will help WAPDA undertake more rigorous financial and economic analyses.

Equipment Modernization

Improving the production, distribution, and conservation of energy from all fuels—oil, gas, coal, sun, water—will require Pakistan to import large quantities of hardware. Such equipment as steam generators, photovoltaic panels (for solar collection), and insulation are needed to conserve energy, convert industries to lower-cost fuels, improve electricity production and distribution, mine and process coal, explore for indigenous oil and gas, and exploit renewable energy sources.

These purchases would severely burden Pakistan's international balance of payments. The U.S. assistance program therefore will provide both government ministries and private corporations \$100 million in loans and grants to ease this burden and ensure a smooth transition to energy growth.

Overall, these energy development measures should leave Pakistan's institutions ready to tackle the still more complex energy issues of the 1990s.

◀ *New transformers will increase the efficiency of electricity distribution.*



*Electrician
in training.*



The Charands Rural Health Center, like others around the country, was built with USAID assistance.

Health Care

In Pakistan, seven mothers out of 1,000 die in childbirth, largely because of poor prenatal and child delivery care. One child in five dies before its fifth birthday. The average life expectancy is only 55 years, compared to 75 years in developed countries.

These health problems are particularly acute in rural areas, where most of Pakistan's population lives but where few doctors go to practice.

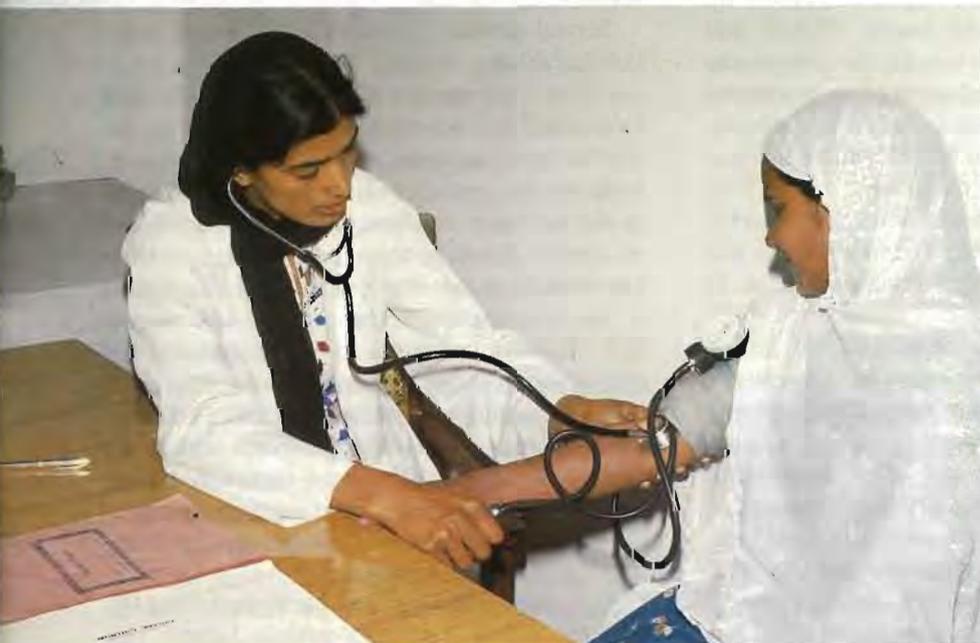
Sobering as these statistics are, they represent an advance over past years. The U.S. assistance program has helped Pakistan improve health in the country's 45,000 rural villages since 1977, when it introduced a three-tiered health care system that brought medical facilities and trained paramedics to the rural areas where doctors were reluctant to serve. This system is still being installed.

At the top of this rural system is a Rural Health Center, which provides primary health care to its immediate neighbors and plans and manages all health programs in a large administrative area. Each center oversees and supports several Basic Health Units, which extend primary services to

smaller sectors. They also train and support community health workers, paramedics stationed in the individual villages. Each Rural Health Center and its subordinate health units and community workers compose an Integrated Rural Health Complex that serves about 100,000 people.

The program has made a good beginning, but much remains to be done. Pakistan must strengthen management, supervision, and health-worker training to upgrade medical skills. It must also bring more women into the health care field; Rural Health Centers with female workers have attracted three times more sick women and children than have all-male centers.

At the district and local levels, health centers and their subordinate organizations need especially good planning, management, and supervisory skills. USAID is helping them redesign their existing management policies and practices. It is also holding management training courses for medical officers and administrators. These and other measures will help Pakistan's overall health system offer better, more uniform care throughout the provinces.



A trained medical technician takes a pregnant patient's blood pressure.



Students at the Lahore Malaria Training Centre.

Medical skills along with management skills will be improved under the program. Advisors are helping government health officials revise training materials for medical technicians and community health workers to give more emphasis to preventive medicine and community health. USAID will provide kits of medical supplies to community health workers and medical technicians. It will also build 13 permanent medical technician schools, which will offer hostels for students and residences for instructors. (Many of the present schools have only one room and no hostels, which has hindered the recruitment of women.) The new schools will replace many of the small, temporary schools in current use.

Special efforts are being planned to attract women health workers. For example, U.S. advisors will guide a recruitment campaign and help officials strengthen training for women.

Finally, both before and after undertaking these health-care measures, USAID will help gather data on the frequency and cause of illness and death in Pakistan. Comparing the results of these and other interim studies will help Pakistan's health officials and U.S. advisors measure the

impact of the programs. The program will also research the costs of basic health care in Pakistan and develop pilot programs in alternative health-care financing arrangements.

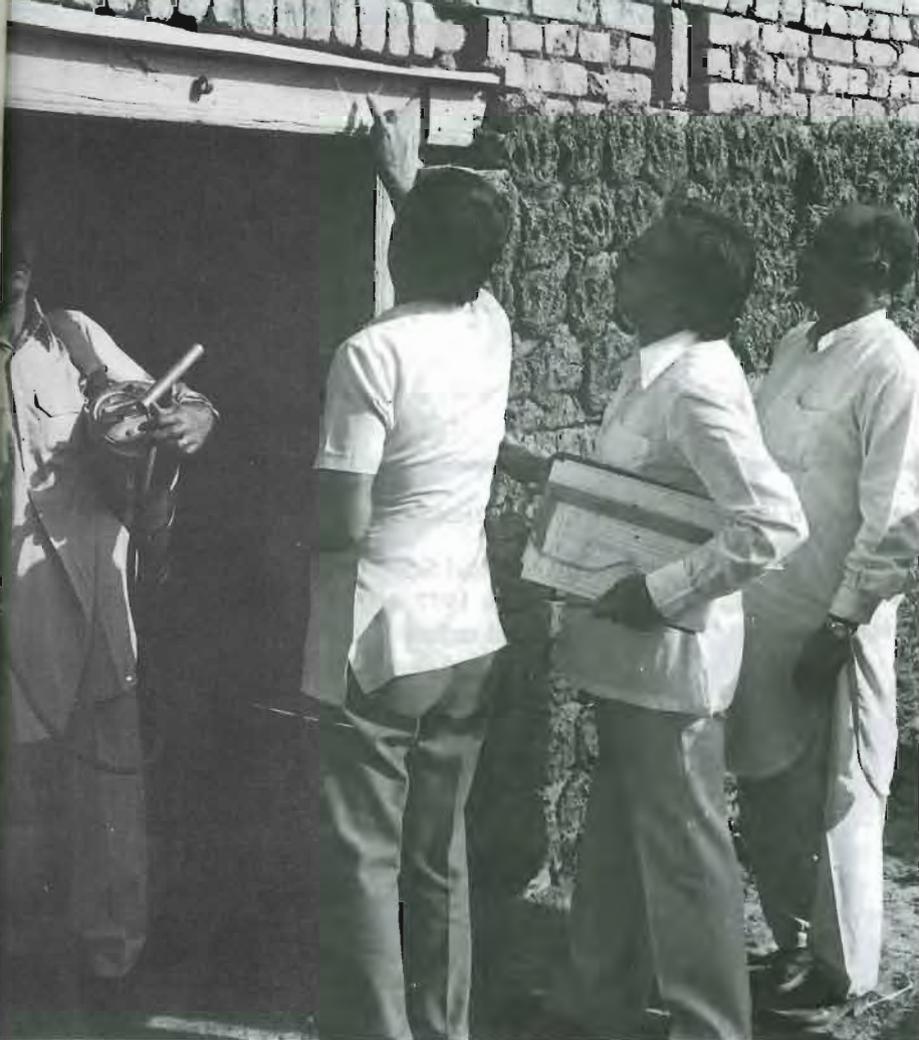
Disease Prevention

Several problem diseases require special attention in Pakistan.

Carried by mosquito, malaria is easily contracted and difficult to control. Past U.S.-Pakistan efforts have successfully brought the disease to heel, but the mosquitoes have developed resistance to the most common insecticides, allowing malaria to reenter Pakistan from neighboring countries (particularly Afghanistan) where it is still rampant.

To keep malaria under control, advisors will help Pakistan organize a well-integrated system of mosquito controls and disease treatment. U.S. epidemiologists and other advisors will help the Directorate of Malaria Control update its control strategy. At the same time, USAID will strengthen Pakistan's technical skills (especially in the provinces) and upgrade national and provincial training and research programs.

Focus also will be placed on strengthening the National Malaria Training Centre in Lahore. This



Inspectors prepare to spray insecticides provided by USAID to kill malaria-carrying mosquitoes.

center currently rents a small, four-room building that is totally inadequate to meet the present and future needs of Pakistan's malaria control program. U.S. assistance will allow the center to buy, renovate, and equip a new training facility. Most importantly, technical advisors will help the center revise its curriculum and teaching methods, analyze the manpower and training needs of the malaria control program, and train students in epidemiological analysis and methodology.

In addition, this program supports vital malaria research, including studies of the effectiveness of the insecticides in current use, improvements in disease surveillance, malarial resistance to drug treatment, and innovative approaches to obtaining public cooperation in the program.

In the field, USAID is providing Pakistan with all the insecticide it needs to spray for 1984, 1985, and 1986. Special vehicles and spraying machines

required for the unique problems of urban malaria control are also being provided.

Other diseases also present serious health problems. Six preventable diseases cause a full third of the deaths of children under five: diphtheria, pertussis, tetanus, poliomyelitis, tuberculosis, and measles. The Government of Pakistan has been immunizing about one million children annually, but 3.5 million new children are born every year.

Under an accelerated, USAID-assisted program, Pakistan hopes to (1) immunize 15 million young children in two years (after this, only newborns would need immunization), (2) train a midwife for every village, and (3) expand the production and use of life-saving rehydration salts for children with diarrhea. American assistance will help provide vaccines, syringes, and equipment to make vaccines and prepare rehydration salts.

Health in the Villages

Interview with Elahi Bakhsh Sumro, Director of Health, Punjab.

USAID health assistance to Punjab started in 1977, when the United States started building medical schools and Rural Health Centers throughout the province.

Between 1977 and 1983, USAID set up 28 Integrated Rural Health Complexes in Punjab. The IRHCs each consist of one Rural Health Center staffed by three doctors (one female), four medical technicians (two female), and various paramedical staff. These centers each oversee four Basic Health Units, where male and female medical technicians provide both preventive and curative health care. They also train community health workers from each village in first aid and treatment of minor ailments. After training, the community health workers receive first aid kits with necessary equipment and medicines.

So far, in the first six IRHCs, we have trained 801 community health workers (490 male, 311 female); 131 more workers (89 male, 42 female) are now in training.

The program is definitely working satisfactorily. We are now providing curative and preventive medicine at people's doorsteps.

New Medical Schools

Between 1977 and 1983, USAID also built 11 medical technician schools, six for in-service candidates and five for fresh candidates. These schools offer a total of 300 seats, 178 for males and 122 for females. Both types of schools train sanitary inspectors, vaccinators, civic supervisors, and others. At the in-service schools, the instruction lasts only one year because the students have already had one year of training and some experience. For fresh candidates, who must be matric in science, second class minimum, the training is a year and a half. Once trained, these graduates take over as rural health workers.

USAID is now building five more permanent medical technician schools in Punjab. They will construct the schools, the student hostels, and the teachers' quarters. The program will also equip each school and provide audio-visual aids and vehicles, so the students will be trained properly. Each school will admit 100 students, 50 male and 50 female.

In the next five years, I think we will be able to cover most of the rural population in the province.



Health clinics extend a wide variety of important health services to all ages.



Past and future in Gadoon-Amazai. USAID is helping Pakistan replace poppy fields (above) with fields of high-yield, drought-resistant wheat and other crops.

NWFP and Baluchistan

Gadoon-Amazai

The landscape of Gadoon-Amazai is stark. Rock-walled terraces and scattered mud-brick villages cling to the sides of steep, barren hills. Only 5 percent of the region is irrigated. Poppy cultivation is important to the area's economy.

It is the Government of Pakistan's desire to give Gadoon-Amazai a strong, diversified economy not tied to poppy growing. Projects have been agreed upon with USAID which will help the area make the switch in several ways.

Roads, Water, Electricity. At present, only 26 miles of road in the entire Gadoon-Amazai area can carry vehicles. Many villages are reachable only by unimproved paths that even loaded donkeys cannot travel. America's assistance will allow construction of 33 miles of major road, 16 miles of feeder roads linking villages to main roads, and 100 miles of new donkey tracks passable by motorcycles, in addition to paving of nine miles of a major road.

In addition, USAID will help the Public Health Department rehabilitate 23 potable water systems and build 24 new ones. Finally, the United States will finance electrification of 30 villages, allowing 48,000 area residents to reach the outside world, store vaccines, and pump water from tubewells.

Agriculture. USAID and the Government of Pakistan aim to raise the total productivity of the land four ways. First and most important in the short run will be a program to increase income from rainfed crops other than poppy. Special high-yield wheat and maize varieties have been introduced, as well as other grains, oilseeds, and vegetables. Fodder legumes resistant to drought will also be introduced. Cooperating farmers receive free assistance with their crops, learning how to obtain the greatest possible yields.

Another program will help rehabilitate and manage uncultivable watershed lands—currently 80 percent of Gadoon-Amazai's agricultural land. Upper slopes of the region's hills have been reduced to poor-quality grasses and shrubs by overgrazing and overcutting. The resulting erosion is reducing Gadoon-Amazai's cultivable area by up

to 2 percent a year. Increasingly rapid water runoff and reduced water retention exacerbate the shortage of soil moisture and stream water for agriculture.

To slow this process, the program is reforesting upper slopes and introducing tree farming of fast-growing tree varieties. It will also reestablish improved pasturage, introduce higher-quality livestock and poultry, and develop better water-courses.

A third project will provide local marketing organizations the resources to develop their marketing channels for non-poppy products. Advisors will help these organizations overcome such barriers as lack of intermediate storage facilities, poor contacts with local officials or area farmers, and inadequate information on local production.

Finally, help will be provided to small farmers to irrigate more land, enabling them to expand production of high-value crops. Small check dams will irrigate 375 more acres, increasing the total irrigated acreage in Gadoon-Amazai roughly 15 percent.

Off-farm Jobs. Population growth and the end of poppy growing will mean more people looking for work off the farm. U.S. assistance will help area residents acquire skills marketable both in Pakistan's urban centers and in the Gulf, where there are more employment opportunities than in Gadoon-Amazai. This program will establish a training program in basic construction skills that will produce nearly 1,100 job-ready artisans a year. Courses for trades requiring a higher skill level (electricians, mechanics, welders, etc.) will also be available. And the quality and availability of basic schooling for everyone, especially girls, will be increased.

Tribal Areas

The Tribal Areas cover about 10,000 square miles of arid valleys, hills, and mountains. The people are scattered in isolated hamlets and generally produce only enough food to feed themselves. The rough terrain limits agriculture to



Baluchistan's Bela-Karawan road. Paved section was completed in 1983.

a few valleys, and uncertain rainfall makes farmers depend on irrigation.

USAID and the Government of Pakistan have agreed to undertake three basic activities in the Tribal Areas: developing water resources, building roads, and financing supplementary development.

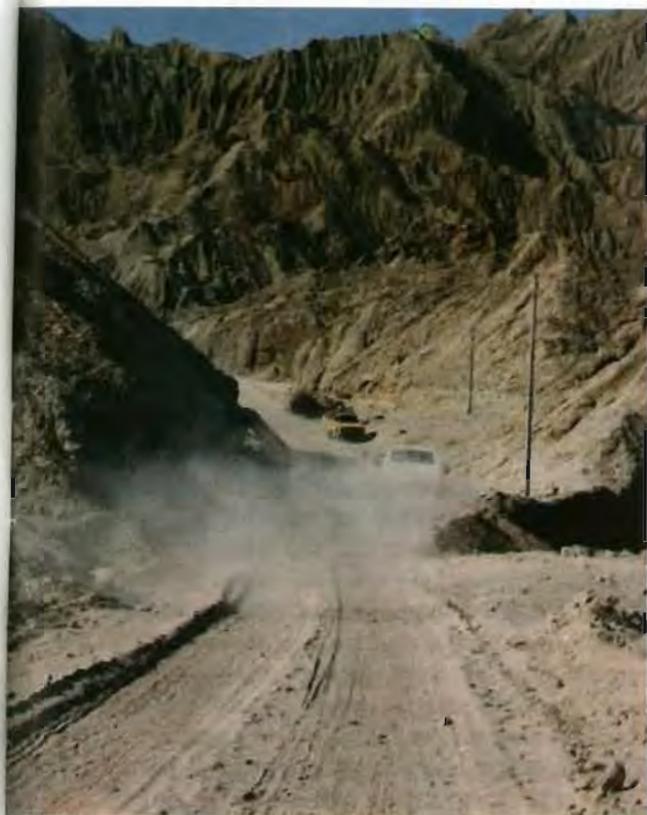
Water. The Bara Irrigation System in Khyber offers the agency a dependable source of water for agriculture. As in other areas of Pakistan, however, the watercourses are in poor repair and much water is lost after leaving the main canals. In addition, Khyber farmers have only two main growing seasons; at other times, water passes through the system unused. Overall, farmers use only 20 percent of the water available to them.

To improve farming in Khyber, USAID will upgrade watercourses and build needed irrigation structures, such as drains, road crossings, and canal outlets. At the same time, assistance will be provided to help teach farmers to grow crops in the

off season, using water that is now wasted. These measures will generate a cropping intensity of about 65,000 acres, well more than double the current 25,000 acres.

Because surface water in the Tribal Areas is limited, the area's Development Corporation is looking to develop new groundwater sources. Unfortunately, it lacks the necessary equipment and skills to conduct its search scientifically, systematically, and efficiently. USAID will therefore help the development corporation improve and accelerate the search for groundwater in the Tribal Areas. After drilling test wells and making numerous other investigations, it will drill tube-wells at prime locations, installing systems that will increase each well's long-term productivity by 20 percent.

In Kurram and South Waziristan, U.S. assistance will finance the design and construction of several small irrigation systems. For instance, in Sheen Tangi in Kurram Agency, a system will be



Construction continues in mountain passes.

built at bedrock in the bottom of a stream bed to capture all water flowing in the ravine after the stream itself has run dry. The Sheen Tangi project will serve 4,000 people and add about 3,000 acres of irrigated farmland.

For all these water development projects, USAID will provide technical assistance, training, and up-to-date equipment. Advisors will demonstrate modern groundwater investigation and monitoring techniques, surface water retention and deployment systems, on-farm water management systems, watercourse improvement and construction, and improved agricultural practices. Technical professionals and field staff of the Tribal Areas' Development Corporation will receive special training, both in Pakistan and abroad.

Roads. Building roads is a high priority for both the Government of Pakistan and the tribespeople. Many existing "roads" are just tracks, some of which are impassable in some seasons. The U.S. will finance construction of more than

75 miles of new gravel roads to help link inhabitants of the Tribal Areas to markets, health care, and schools. and will also supply necessary technical assistance and equipment.

Supplementary Fund. In an experimental project, USAID will provide Rs. 2.5 million for a special fund to finance discrete, small, self-help development projects. Such projects include schools, health facilities, housing for teachers and health workers from outside the area (the lack of housing is a major barrier to recruitment), cooling houses for slaughtered meat, link roads, flood-control structures, and irrigation gates on small community water systems. American and local fund managers will coordinate projects with the political agent in each agency, who also has a fund for such projects. Up to 40 projects will be financed by the end of 1985.

Baluchistan

Vast distances, poor roads, arid climate, and a shortage of skilled workers have long delayed Baluchistan's development. U.S. assistance projects in the province will focus on Makran Division, the area most neglected by past development programs.

Roads. The Makran Division is seriously isolated from the other areas of the province and from the market center of Karachi. "Roads" are gravel and silt tracks with no bridges and few improvements through hills and mountain passes.

To remove these transportation barriers, the area's most serious constraint to development, a project will improve and rehabilitate priority roads to assure adequate access into, out of, and within Makran. U.S. advisors and financial assistance will help the province's Communications and Works (C&W) Department improve up to 600 miles of trunk routes, widening roads, easing curves, improving water crossings, and realigning roadways. Training will be provided for C&W workers along with grading equipment to establish improved road maintenance practices.

The road from Bela to Awaran is the major traffic bottleneck from Makran to the market center of Karachi. Two mountainous sections (a total of 34 miles) are impassable in rainy weather

and must be moved to keep the road clear all year. USAID will fund the engineering and construction services to survey, realign, and pave the two mountain stretches and to establish a proper alignment for the entire 68-mile roadway.

Before these road improvement projects begin, C&W staff ranging from gang foremen to executive engineers will be trained in drainage design and construction, general construction practices in the field, quality control, staged construction practices, planning and maintenance of roads, and operation of equipment.

The project will also help the C&W Department improve its overall planning and operation techniques. Technical consultants will teach management staff the best ways to (1) plan road maintenance and development, (2) generate income or increase budget resources, and (3) introduce cost-effective drainage techniques.

Water. Rainfall in Makran is erratic; a drought may last as long as three to five years. More than 90 percent of the district's irrigation water comes from 457 "karezes," long, subterranean tunnels that collect and transport underground water. The karezes could provide even more water. Another USAID-supported project will help make several technical improvements to increase the channels' flow and operational lives.

At the same time, U.S. assistance will help the C&W Dept. to develop new surface water resources; the Kil-Kaur and Goberd dams are two potential projects. The former could produce a reservoir of 10,000 acre-feet of water, enough to irrigate 5,000 acres. The Goberd dam would capture a river's flow for direct diversion into an existing canal, which would be lined with concrete. The dam could help irrigate more than 1,300 new acres. Both these areas boast good, fertile land that has lacked only water to produce good harvests.

Finally, the program will provide funding and technical assistance to renovate watercourses to farmers' fields and will introduce precision land leveling to improve soil and water use.

Planning, Management, Human Resources. Strengthening the capacity to plan and carry out

projects for Baluchistan as a whole, and for Makran in particular, is the most difficult and important long-term element of the Government of Baluchistan's development effort. The program will provide U.S. advisors to the Planning and Development Department to help it improve its systems for designing and analyzing new development projects. They will also improve monitoring, reporting, and evaluation systems within the department.

At the same time, a project will help the Government of Baluchistan establish and train staff for a new organization—the Project Planning and Management Unit—to plan, monitor, supervise, and evaluate Makran's development programs.

But improved agricultural management must reach down as far as the farmers themselves if the province is to gain the greatest possible benefit from its new roads and water sources. At present, field assistants hired by the provincial government extend agricultural know-how to farmers. Unfortunately, they have difficulty obtaining the latest information and are often short on practical experience. USAID will therefore provide these field assistants brief, intensive training courses and materials. The assistants will then be able to take more information (on pesticides, water use, fertilizers, etc.) to the fields. They will also be provided with motorcycles, the lack of which has severely hampered their extension efforts.

To further encourage farmers to change their growing habits, American experts will work with a few progressive farmers, exploring and testing technical ideas on their farms. This will help to introduce improved seeds, better cultivation practices, new tools, and better water management techniques to the entire area.

Supplementary Fund. A special \$1-million fund similar to that in NWFP will help Makran Division officials deal with current development problems. Possible projects, besides schools and small water projects, include the initial phase of a comprehensive plan for water resource development and a marketing study to identify profitable crop alternatives for the province.

**U.S. ASSISTANCE TO PAKISTAN
1982-1987**

(millions of U.S. dollars)

	Loan	Grant	Total
AGRICULTURE			
Agricultural Research		\$ 3.2	\$ 3.2
On-farm Water Management		10.0	10.0
Irrigation Systems Management		90.0	90.0
Agricultural Commodities and Equipment	\$ 197.0	103.0	300.0
Integration of NWFP's Agricultural Network		35.5	35.5
Management of Agricultural Research and Technology		30.0	30.0
Food Security Management		35.0	35.0
Forestry Planning and Development		25.0	25.0
AGRICULTURE TOTAL			<u>\$ 528.7</u>
ENERGY			
Rural Electrification	104.0	64.0	168.0
Energy Planning and Development		30.0	30.0
Energy Commodities and Equipment	80.0	20.0	100.0
Lakhra Coal Power Generation	62.0	63.0	125.0
ENERGY TOTAL			<u>\$ 423.0</u>
HEALTH CARE			
Primary Health Care		20.0	20.0
Malaria Control		44.2	44.2
Population Welfare Planning		65.6	65.6
HEALTH CARE TOTAL			<u>\$ 129.8</u>
NWFP AND BALUCHISTAN			
Tribal Areas		24.0	24.0
Baluchistan		40.0	40.0
North West Frontier Province		30.0	30.0
NWFP AND BALUCHISTAN TOTAL			<u>\$ 94.0</u>
OTHER ASSISTANCE			
Private Sector Mobilization		50.0	50.0
Rural Roads		40.0	40.0
Development Support Training		25.0	25.0
Project Design Fund		15.0	15.0
Project Reserve		19.5	19.5
P.L. 480 (edible oil imports)	300.0		300.0
OTHER ASSISTANCE TOTAL			<u>\$ 449.5</u>
TOTAL U.S. ASSISTANCE			<u>\$ 1,625.0</u>

**UNITED STATES INFORMATION SERVICE (USIS)
AND
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT (USAID)
ISLAMABAD, PAKISTAN**

Barqsons Printers Limited, Islamabad



