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CHEMONICS
INTERNATIONAL CONSULTING DIVIS

END OF TOUR REPORT
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CHIEF OF PARTY

SUBMITTED TO

THE MINISTRY OF RURAL AFFAIRS AND AGRICULTURE,
THE UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT "USAID"

AND TO

THE NATIONAL SEED COUNCIL

BY

CHEMONICS INTERNATIONAL CONSULTING DIVISION
CONTRACT GOB/AID-511-059-008-HCC

SEPTEMBER, 1986

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A. INTRODUCTION

The author was hired by Chemonics International in May of 1979 to serve as Adviser in Sector Planning and Chief of Party of the Agriculture Sector II Project in Bolivia. The Project, better known by its number T-059, is signed between the Ministry of Rural Affairs and Agriculture (MACA) and the Agency for International Development (USAID/B). The Departmental Development Corporation of Tarija (CODETAR) also participates. The Technical Assistance Contract, number GOB/AID-511-059-008-HCC is a host country contract signed between MACA and Chemonics.

After a brief visit to La Paz in May, I arrived on a permanent basis with the rest of the initial team, the Project Supervisor and a procurement specialist from the Home Office on June 10, 1979. The initial two-month period was occupied in start-up of the Project which included the following activities:

- hiring personnel in La Paz and Yacuiba
- locating office space in La Paz for Chemonics and the Coordination Office of MACA
- purchasing office and household furniture for homes of seven long-term advisers
- setting up accounting systems and bank accounts in La Paz and Yacuiba
- initiating purchase of five project vehicles
- assisting advisers with housing, clearing personal effects through customs
- preparing initial work-plans with MACA and CODETAR

The start-up was made easier with the assistance of the Director General of MACA, Inq. Gover Barja, and the Coordination Office, which had been established by MACA to administer the Project.

After this two-month period, my activities were to be divided in two parts: half-time in sector planning and half-time as Chief of Party (COP). The latter implies support and supervision of the other technical areas of the Project, assistance with procurements, and administrative supervision. However, in practice an adequate work-plan was never agreed upon with the Office of Sector Planning of MACA and duties as Chief of Party consumed far more than half-time. As a result, the split in use of my time was about 90 percent as COP and only 10 percent in sector planning. This did not come as a disappointment, in that the opportunities for meaningful planning were

minimal at the time due to frequent political turnovers.

With the signing of Amendment 6 to the Contract in June of 1981, my responsibilities were changed officially to reflect the reality of the situation: 100 percent of time devoted to activities as Chief of Party. A new position was defined for a Sector Planning Adviser. However, the specific tasks to be performed were never defined, so the position was not filled.

Because the Project was designed to support various components of the agriculture sector, it consists of a diversity of technical areas, many unrelated to each other. Figure 1 on the following page provides a brief synopsis by showing the periods of time during which each technical area was "active". This roughly coincides with the presence of advisers, either long-term or short-term, working in the area. Procurement activity is not shown separately, but was performed in support of various technical areas of work, notably heavy equipment maintenance and seed production.

After the first year of the Project, it was apparent that field programs had greater chances of success than institution-building efforts at the central level. Thus efforts were not only reduced in sector planning, but also in organization and methods plus data processing. Exceptions to this are the Technical Reorganization Council of MACA and the information systems program, called CICTAR. Major field programs that expanded during the 1980-83 period are: seed production (three regional programs and national program development), soil conservation and cotton production.

As seed production programs grew, we began to use most of our effort in this area. During the last two years of the Project there were four full-time advisers working in seed technology. The adviser in cotton production also spent about half his time supporting the production of cotton seed in the 1985/86 crop-year. As Chief of Party, nearly half of my time was dedicated to this area, concentrating on seed program development and marketing. By the end of the Project in September, 1986, T-059 was known to most people in the agriculture sector of Bolivia as a seed project.

As activities expanded and became more complex, technical supervision demanded greater amounts of attention. Supervision of local administrative staff was reduced to a minimum. In time, problems with a backlog of work and confusion in accounting began to be noticed. Hence a Deputy Chief of Party position was defined and filled in July 1984. In retrospect, the heavy reliance on local personnel to manage a contract of this size appears to have been an error. Fortunately, no permanent problems in administration have developed, but it required a considerable effort to catch up with accounting, inventories, personnel records, etc.

Chemonics' final report provides details of each technical area including the work of each adviser. Rather than duplicating that information here, I will instead present some observations about the approach used by Chemonics in providing technical assistance and the nature of the COP's role in the team. This is followed by a candid personal evaluation of each technical area of work. The last section presents a justification for further support in two areas of endeavour--seed production and soil conservation.

Figure 1

TIME DISTRIBUTION OF WORK BY TECHNICAL AREA

TECHNICAL AREA	1970	1980	1981	1982	1983	1984	1985	1986
Land Clearing	-----							
Heavy Equipment Maint.	-----							
Farm Mechanization			-----					
Soil Conservation				-----				
Cotton Production					-----			
Organization & Methods	-----							
Reorganization Council				---				
Sector Planning		-----						
Data Processing		---						
Information Systems			---		-----			
Seed Production, Santa Cruz		-----						
Seed Production, Chaco					-----			
Seed Production, Chuquisaca						-----		
Seed Programs, National					-----			
Special Studies	---					---		
Special Training						-----		

Notes: The land clearing, heavy equipment maintenance, farm mechanization and soil conservation areas are all specific to the Gran Chaco. Also the cotton production program is specific to this area.

Seed production activities include advisors in seed technology, design and installation of seed conditioning plants, feasibility studies, marketing and other support.

Special Studies include fruit and vegetable processing and marketing studies in Tarija and Chuquisaca, plus a study for a flour mill in Chuquisaca.

Special training refers to courses given in Tarija, La Paz and the Gran Chaco in the area of natural resource management and conservation.

B. TECHNICAL RESPONSIBILITIES OF THE CHIEF OF PARTY

As can be seen from the above, the T-059 Project has been open-ended in terms of clients, goals, and technical areas of work. Many new programs were initiated within the Project. Programs showing more promise were expanded, while those that presented more difficulties were slowly phased out. Because of this flexible environment, the role of the Chief of Party took a different turn, perhaps than that experienced in most other development projects. A brief description of the nature of my activities under the Project follows.

1. Promote relationships with client institutions

Early in the Project it was established by both MACA and USAID that a variety of activities could be financed by the T-059 Project, and that Chemonics could be asked to carry out different tasks as needed. Consequently, we received a series of requests for assistance from local institutions. Each of these required thorough investigation to determine the needs for technical assistance. In other cases, contacts were initiated by the COP to deliberately promote requests for assistance, particularly where we could see possibilities for making a positive impact.

This ability to actively generate "new business" in multiple technical areas with clients from around the country gave the Project a special flare. This is perhaps an ideal situation for a consulting company. It gave us the needed flexibility, allowing us to respond to needs as they arose.

2. Preparing work plans and progress reports

Detailed work-plans done at the outset of the Project turned out to have little use, especially when interacting with local leader/clients in the agriculture sector (private and public). Instead, they were more interested in knowing about sources of support and in taking decisions regarding the strategy to be adopted by their institutions. Hence, formal work-plans gave way to development of overall policies and strategies of program development. These were agreed upon among the local clients (collectively when possible), the adviser, and the COP. Sometimes the decisions were incorporated into documents of the local institution, such as annual budgets and plans of action. Other times they are reflected in Chemonics documents, such as feasibility studies or progress reports. Other decisions were agreed upon verbally, but never recorded in writing.

Local leaders would usually define only limited goals for their institution and their area of work, and only for a single crop cycle. However, the advisory team needed to establish overall Project goals for our areas of responsibility, and report on progress achieved in light of established goals. This was needed for our own purposes in order to openly program activities and define priorities for use of advisers' time, and to establish a meaningful system of reporting for MACA and USAID. As a result, Semiannual Progress Reports became a tool for goal setting. Objectives were set in numerical terms when possible. These represented the ambitions of the advisory team for each of the programs, but did not necessarily reflect the specific agendas of multiple local institutions and leaders.

3. Representation of advisers and leader/clients in decision-making processes in La Paz

On many occasions policy decisions were considered at the central level that would negatively affect the work of the advisers and their clients. In other cases, policy decisions were needed to support the programs. Often the position taken centrally did not coincide with the needs expressed by the leaders of the different programs. This is particularly acute in Bolivia where the capital city of La Paz is at a considerable distance from the agricultural regions where the Project is involved. It often became the role of the COP to transmit the realities of the regions and local institutions to authorities in MACA and USAID. Often the success or failure of programs hinged on the objective and accurate transmittal of timely information.

When major differences in interests arose, Chemonics made it clear that our purpose in working in Bolivia is to support the agriculture sector by making improvements in systems of production. In some instances, we felt that authorities at the central level had their own agendas based on political positions.

4. Channel funds for Project activities

Weekly meetings were established among the three institutions responsible for managing the T-059 Project (MACA/USAID/Chemonics) to take decisions regarding Project resources. This included funds for training, installation of seed plants, procurements, working capital for institutions, and other uses. Reprogramming of remaining balances in conjunction with the Office of Coordination between as many as fifty separate activities became an on-going task. During the last three years of the Project, Chemonics took direct responsibility for a separate budget to carry out training within Bolivia.

We also assisted client institutions in channeling funds from other sources for investment and production credit. This support was limited to specific cases because of the huge amount of time required.

5. Program short-term technical assistance

On more than one occasion, teams of short-term advisers were assembled to perform studies or present short-courses. Usually these were made up of both local and foreign advisers, a method we found to be highly effective. In each case, considerable preparation was required to ensure that the job was well defined and the nature of the job to be performed was understood. Despite efforts to reach definitive agreements on scopes of work, these nearly always required further analysis during the first days or weeks of the adviser's assignments.

Most studies were done in direct support of on-going activities where the Chemonics' team would also be responsible for implementation of the activity being studied. Studies for projects outside of this framework nearly always ended up "on the shelf", and were not implemented.

6. Participate in studies, courses and other events

On many occasions, the COP participated directly as an instructor in short-courses. However, I took primary responsibility for only one short-course, which was on seed marketing. This was presented in each region, seven courses in total.

Four national "Round Table" meetings on seed program development were organized and carried out with Chemonics' support. The role of the COP in these, and other similar events was to work with local committees in planning agendas, preparing technical presentations, coordinating speakers from outside the country, and providing administrative support. The Round Table meetings in 1985 and 1986 grew to larger proportions, and required considerable effort over several months.

7. Advise clients directly

Since advisers worked daily with many institutions in developing plans and strategies for programs, the COP became involved only when specifically requested to do so. In most instances, this was at times when the institution required information and orientation to facilitate interaction with MACA, USAID, PL-480 or other central institutions. In other cases, assistance was needed to promote interaction among institutions within a region or between regions. Fortunately, funds were available through the Project for "interchange travel". These were used at the discretion of the Coordination Office and Chemonics to facilitate meetings between regional seed councils and others.

8. Institutional formation

Several institutions were created through the activities of the Project, among them six regional seed councils, an information service called CICTAP, and an association of cotton producers, ADEPACH. Others developed in parallel with Project activities, such as the Integral Cooperative in the Chaco, an association of grain producers, APOGRA, and an association of seed producers. Projects were developed for many of these institutions to help them define their roles and functions and obtain financing to cover expenses during their initial period of operation.

9. Advise USAID and MACA on policy

On occasion, when assistance was requested, advice was provided to MACA and USAID. Usually this was done within the confines of Project activities. On less frequent occasions, advice was given on matters separate from the Project.

Most of the above responsibilities and functions were, of course, shared by the COP with other advisers. As stated above, many of these activities are probably specific to the T-059 Project due its open-ended nature. For instance, most development projects would probably not include much deliberate effort in generating new business, nor would they provide this amount of flexibility in choosing among clients and technical areas. I feel this flexibility has contributed greatly to the success of the advisory team.

C. PERSONAL EVALUATION OF TECHNICAL AREAS

In this section, a candid personal evaluation of each technical area will be given. Since Chemonics' final report on the Project will provide a detailed description of each area, that information will not be repeated here. Only a minimum of background is presented so that the evaluation will be clear to persons not familiar with the Project.

From the previous section, the reader can appreciate the nature of the activities and responsibilities of the COP. Hence it is not necessary to indicate specifically my activities in each of the technical areas. However, the evaluation concentrates on aspects in which the COP was most highly involved.

1. Land clearing

Working with the Departmental Development Corporation of Tarija (CODETAR) was a frustrating experience. In the history of our involvement with this program, only two recommendations out of perhaps 30, were ever implemented. These two recommendations are described below.

The first concerned to charging for land clearing by the hour, rather than by the hectare. The importance of this measure lies in the rationality of decisions by the farmer. Charging by the hectare gives the incentive for the farmer to have land scaped clear, and all brush removed from fields to neighboring land. This is an extremely inefficient practice, since brush and fallen trees had to be pushed up to 300 meters or more from some fields. (Scaping the soil completely clear also causes a loss of topsoil.) Most experts recommend pushing brush aside to a maximum of 50 meters, leaving windrows 100 meters apart in the field. When the system was changed to charging by the tractor hour, the efficiency of clearing changed also. Farmers were not so insistent on having their fields left bare. They also agreed to leave the largest trees, which take considerable time to remove (up to an hour per tree). This recommendation, though obvious, took nearly two years to get accepted.

The second was a recommendation to group tractors in teams of 3 or 4, rather than distributing them, one by one, around the region. Mechanics and field supervisors complained that it took them an entire day of travel just to reach some of the more distant sites. There was no way to provide support to operators. Politically it is beneficial for CODETAR to disburse their machinery because the presence of the Corporation is more visible. The CODETAR Director also avoids accusations of favoritism for one community over another. Overcoming the latter problem requires a planned work-schedule which must be publicized to demonstrate that all areas requesting services will receive attention. This requires managerial awareness and interest in increasing efficiency. The recommendation was accepted at start of the third season. Operators, assistants, plus maintenance and supervisory personnel were all pleased. But the system broke down within a few months due to inability of officials to handle political pressures from widely disbursed communities. It was never implemented again.

In an effort to achieve better results, several special agreements were negotiated with CODETAR. However, most of the terms of these agreements were not carried out. It was also very difficult to obtain the

information necessary to evaluate the progress being made in the program. Finally an agreement was devised to increase the incentives of the institution to improve the efficiency of its operation. In the original Project, CODETAR was to pay for the D7G Caterpillar tractors by turning over 54 percent of its income from land clearing to the Agriculture Bank. As a result, if less land was cleared, CODETAR paid less. If they improved the operation and cleared more land, only 46 percent of the increased income would correspond to them. Thus an agreement was drawn up whereby CODETAR would pay a flat rate per year for the tractors. At the same time, MACA, USAID and Chemonics agreed that if the payments were made on time, we would refrain from interfering further in the program. After the last payment is made, title to the tractors would be transferred to CODETAR.

Though we did not receive enough information to know whether the efficiency of the land clearing operation improved, the agreement is still considered to be a success. Roughly 4000 hectares have been cleared. Most farmers requesting service receive it. The Chaco has virtually been transformed into an agricultural region. Perhaps the real success of the agreement was in the concept that the payments be made not to the Agriculture Bank, but to the Project. Hence a new account of local counterpart funds was created with an income flow of about 182,000 dollars. As a result, the Project generated funds for other programs, and at the same time no longer invested time and effort in the land clearing area. More will be said about the special counterpart funds below.

2. Maintenance of heavy equipment

The experience with CODETAR in setting up a maintenance program and installing a large shop was largely the same as that described above. The Chemonics Adviser perceived the lack of support and interest on the part of local counterparts. He personally took responsibility for running the shop, as shop foreman. Decisions needed at the central level usually led to frustration. On one occasion he attempted to set up a program whereby mechanics would purchase their own tool sets. This is done in many places to avoid problems with loss of tools and possible theft. Different schemes for sale of tools were presented, but never implemented.

3. Farm mechanization

This activity began with an equipment pool in the Integral Cooperative. Problems with maintenance, scheduling of equipment, high costs, and poor management abounded. Perhaps the major contribution of the Adviser in Farm Mechanization was in getting the entire pool sold to private farmers. Afterwards, we attempted to develop a program for assisting farmers in routine maintenance and operation. However, MACA did not agree, and cancelled the position held by the Adviser. Although we did not agree at the time, in retrospect this probably turned out to be the right decision. A private company in Santa Cruz is now contracted through the Integral Cooperative to assist farmers with maintenance.

4. Soil conservation

The first year was met with frustrations because none of methods suggested and tried had caught on. One practice that was tried consisted of construction of broad-based terraces on a field of about 20 hectares.

Broad-based terraces are not traditional bank terraces, instead they consist of contour canals or berms every 50 to 100 meters down the field. These are used on land with low slopes, but they stop the flow of water coming from foothills above the field. However, the farmer failed to cultivate on the contour, and consequently destroyed the effectiveness of the terraces.

At the outset of the second year, a farmer/leader requested construction of broad-based terraces on a field of similar size. This time they were constructed with a road grader and Caterpillar tractor, instead of with an agricultural tractor as before. Careful records were kept on costs of tractor hours, which turned out to be very reasonable--about ten dollars per hectare. The farmer paid 50 percent of the cost, while the Project paid the rest. Luckily this site was visible to others in the Chaco region, and several more requests for construction of terraces immediately arose.

Because the program had been active for a little more than a year, with little visible impact, we were feeling some pressure from MACA and USAID to justify continuation of the Adviser's position. However, the Adviser in Soil Conservation presented a work-plan for the 1984 season that continued to emphasize experimentation, training, and creating awareness. This was drastically changed to place nearly 100 percent of our effort on terrace construction and contour farming. An internal agreement was reached with the Adviser whereby he and his counterparts would implement terraces on at least 200 hectares during 1984. Only then could the program be defended at the decision-making level of the Project. They fulfilled this objective and went on to build terraces on about 700 hectares by the end of the Project.

The team also trained CODETAR operators in methods of "dirty" land clearing, leaving roots and topsoil intact. They found that an average of four centimeters of topsoil was being lost when land was scraped clean as before. The costs of clearing were also reduced with the reduced amount of tractor time used. This new method is used only at request of the farmer client. CODETAR has taken little interest in adopting policies to promote new methods or seek alternatives. However, perhaps around 25 to 40 percent of land now being cleared is done using the "dirty" system.

In summary, after a first year of experimentation in which the Adviser was having trouble adopting a deliberate focus to his work, this program has turned out to be very successful--probably more so than most foreign experts can hope for in overseas assignments. The Adviser and his counterparts became extremely well accepted and appreciated. The program has high visibility and has generated great interest in the region and around the country.

5. Cotton production

This program comes closest to fitting the model of a "planned" activity. The initial request for support came from Chaco farmers. A very thorough study was done, including agronomic, economic, agroindustrial and marketing aspects. A five-member multidisciplinary team was put together local y in record time for this purpose. The USAID Project Manager, Ing. Jorge Salvo and the Chemonics COP also assisted. The study was completed

and published in less than two months. It included an implementation plan for the first five years, and recommended a solid, deliberate approach for supporting the cotton production with the small farmer. Particularly, it recommended small parcels of cotton per farmer to ensure availability of labor at harvest.

The plan also included a strong extension program to be paid for by growers. The concept of privately financed extension services for small farmers was thought to be somewhat tenuous. However, no other alternatives existed, and farmers seemed to agree with the concept of having one dollar per hundredweight of fiber deducted from their payments.

Implementation has proceeded according to plan, from demonstration plots the first year (82/83) to over 500 hectares with about 150 growers. Two local technicians were hired and trained by the Adviser to work as special extension agents. The extension services were to be taken over by a local institution after the first two years of the program. However they remained with Chemonics beyond the time projected. The idea was to set up a local institution that could take over several functions, such as extension, ginning and perhaps marketing before the end of the T-059 Project. This would give a chance to provide support to this institution during its first year or two of operation. According to the feasibility study, this institution was to consist of a local committee made up of regional institutions. The committee did function as a policy-making group, but unfortunately, was not able to take on operative tasks.

The formation of a local growers association was not foreseen in the initial plan. It came about later as interest in the program grew. Currently, the functions supported by the T-059 Project are being transferred to the growers association (ADEPACH). Initial capital for operation is provided through the counterpart fund created from the land clearing program in the same region. This will suffice to finance the costs of a manager and two extension agents through most of the next crop-year. Some difficulties have arisen between the Integral Cooperative and the association. However, it appears that the farmer strongly supports the concept of ADEPACH, and sees the need for continued extension services.

This program has been a solid success. It has probably occupied less time of the COP than any other. My main involvement has been in the initial study, assisting the cotton adviser in preparing annual evaluations, and preparing a plan of action for operation of ADEPACH.

6. Organization and methods

The concept of this technical area was to assist MACA in institutional reorganization and internal management. However, the timing turned out to be inopportune for organizational reform. An early attempt was seen as a confrontation by many persons in MACA, rather than a help. Officials in MACA agreed that further efforts would only prove the impossibility for immediate change. Hence the job was redefined to focus on reorganizing the personnel management system of the institution. Studies were completed and some interest was generated, but no actions were taken.

7. Technical reorganization council

A new opportunity arose for reorganization of the Ministry in 1982. A young, dynamic Subsecretary of Agriculture was given support from the Minister to form a group of technicians and proceed to take action. Funds were available from PL-480 to hire the team members locally. Chemonics enthusiastically agreed to hire the team (TRC) under a separate contract with PL-480. We did this even though we recognized the political dangers that would result for our main contract with MACA.

The intent was not to study, but to present individual precise actions that should be taken. But the Subsecretary indicated that he needed to define an overall direction for the reorganization to justify any actions he might take. Thus a process of institutional redesign was necessary, this despite the fact that several studies and designs for MACA were already in existence. The problem resided in the fact that there was, at the time, no overall consensus on what needs to be done institutionally, and to what end. The main issue comes down to whose interests will prevail through access to information and decision making processes. However, local authorities and leaders are not accustomed to openly discussing policy in these terms. Hence, most of the effort is focused on less important matters dealing with institutional linkages, organization charts, and the like. Until the real issues can be dealt with more directly, planning at the central level will continue to be of little importance.

The TRC did not lead to a reorganization because of another abrupt change in government. But it did foment a consensus among perhaps hundreds of leaders in the sector around the country. The message of this consensus is clear: decentralize. The consensus means that the farmer interests should have more weight in decision-making processes.

As suspected, this activity did lead to problems with later Ministers and other officials of MACA. Only with strong support from USAID and from the agriculture sector did the Chemonics technical assistance contract survive. I feel that the results achieved were well worth the effort and the risk. Another Subsecretary, Ing. Alejandro Pacheco, is now attempting to gather the needed resources to restructure the Ministry. The concepts of the reorganization are along the lines recommended by the TRC according to the consensus achieved earlier. In my opinion, the pressure to make these changes--especially in incorporating the farmer in a meaningful way in policy-making processes--will grow constantly as the sector takes on more importance in the country.

8. Sector planning

As mentioned in the introduction, work in this field was minimal. It is my feeling that conducting technical work in planning is fruitless unless one can conceive a strategy whereby policy-making will be eventually influenced and benefitted. The chances for meaningful work of this kind within MACA were very slim indeed.

The first effort made was at the request of the Director of the Planning Office (OPS at that time). This was a personal report on the concept of institutional reorganization of the Planning Office and MACA. The Director requested 20 copies of the report, which, upon receiving, he

promptly got rid of. One or two technicians in the OPS obtained copies from Chemonics and brought the report to the attention of others.

Upon the initiative of two young technicians in the Planning Office and Statistics Department, I assisted in the development of a linear programming model of the sector. The two individuals worked on their own without the backing of the OPS. So when the model was complete, and the analysis presented, we received no meaningful reaction. Nor did the effort receive further support.

9. Data processing

Before the arrival of Chemonics, USAID was already supporting efforts by ERTS to develop capability in digitalizing data from earth satellites. This required specialized computer equipment which was to be provided through the Project. The effort was to be undertaken in conjunction with MACA to satisfy needs for the Statistics Department and administration. This would have led to a central computer facility, perhaps in MACA.

Studies of user needs were done, and equipment specifications developed, but the procurement was not carried out. Though representatives of the institutions were disappointed at the time, it appears that a massive central computer facility in MACA would have been an error. Smaller, less expensive equipment is available which is easier to operate and maintain. I doubt that MACA could have afforded the personnel required to handle a larger system.

10. Information systems

Another request from a Director of the OPS was to carry out a study of information systems in the country. Our first reaction was to avoid getting into another dead-end road with central institutions which could not follow up on recommendations of the study. However, the study was done in two areas: statistical information and scientific-technical information.

Meetings were held at the termination of the studies to decide on actions to be taken. The scientific-technical area appeared most promising and a plan of action was devised. Chemonics provided only a small amount of assistance in preparing and distributing questionnaires for a national registry of professionals. This was to be the end of our cooperation. The Bolivian Institute of Agricultural Technology (IBTA) was to follow-up by tabulating the information. However, this was not carried out. Instead a student of the Catholic University (UCB), Miguel Ibáñez, offered to do the tabulation in our offices free of charge. After publishing the Registry, he went on to develop an agreement among institutions to continue with the plan of work developed earlier. This agreement was signed, and Mr. Ibáñez was then hired as a local Adviser to oversee a group of UCB students who made up the technical team for CICTAR. The students received scholarships paid by the Project, and regional cooperators were recruited to gather and distribute information throughout the country. They offer their services as volunteers.

The concept of CICTAR is to make documentary information available to professionals working in the sector. The young team of students worked extremely hard in producing and distributing information. They received little support in their work, perhaps because the program was oriented toward users, rather than benefitting MACA directly. We again came up against the problem of having to justify the continuation of a program, one that we had not intended to get into from the beginning. Similar to the strategy used in the soil conservation program, an acid test was devised. The group was given four months to raise subscriptions to its Bulletin from about 100 to 600. This test is based on the concept of the users' willingness to pay for the service, and therefore should be accepted by all parties involved.

After two months subscriptions had not reached 200, and the team was genuinely concerned. However, we found that the Bulletins were not being published and distributed regularly. Based on the assumption that the user lacked confidence in CICTAR, a careful and detailed system for publishing and distribution was developed with the group. This system was adhered to exactly for several months. By the end of the four-month period, subscriptions rose to 800, then continued on to about 1200. We estimate that around 3000 professionals work in the sector.

Though pleased with this progress, further support for CICTAR was not forthcoming, except from the UCB. The quality of materials published and distributed did not reach acceptable standards because no members of the technical team had experience in agriculture. It appears that we should have pushed to hire an agronomist for the team. For lack of this kind of support, the work of CICTAR did not move ahead as desired. The team tried to accomplish too many varied tasks in the communications area, and was unable to complete many of them.

Despite the difficulties, CICTAR is the only mechanism many technicians outside of La Paz have of obtaining information. The need and mechanisms to carry out the program are clearly identified. The UCB has provided constant support, and has taken over CICTAR, promising to continue with the program, with the same objectives as were originally defined.

11. Seed production

This program was started in Santa Cruz in 1980. When it began, it was just one more technical area for the Project. No one, except perhaps the Adviser in Seed Technology, Dr. Adriel E. Garay, had any concept of the great potential for the program. The strategy agreed upon was to begin with the crop where demand for seed is strongest--in this case, soybeans. This was done to ensure that producers who put in the required effort to produce good seed could sell it easily, without becoming discouraged. We also agreed that the real beneficiary would eventually be the user of the seed, not the producer. Hence, seed should be produced with the most capable farmers, even though they might be some of the largest.

The first seed crop in 1980/81 was a total loss. However, since only about a dozen large farmers were involved, it was not a serious disappointment. The winter 1981 crop was impressive, nearly 600 metric tons. Local seed sold readily, competing with imported seed.

At this point the National Director of Seeds in MACA attempted to limit our work to supporting only his institution, rather than the private sector. The alternative, as he wrote in a letter to the Minister, was to remove Chemonics from the seed component of the Project. Again with support from USAID and the agriculture sector, the Adviser was permitted to continue with the program.

At this point, however, the Adviser alone was supervising seed fields and orienting producers. Further progress depended upon decisions taken in MACA and other institutions to provide support, especially to form a Certification Service that could promote seed production and carry out quality control. A strategy paper was prepared and distributed for this purpose. In retrospect, much of what was proposed in the paper we would not now agree with. But at the time, it helped get local leaders to make key decisions about certification and other aspects of the program. Later the National Director was changed; local leaders put in a key person for about eight months to carry out many of the decisions.

One of the decisions dealt with the Seed Conditioning Plant in Warnes, which was being operated by MACA Certification personnel. The strategy agreed upon was to rent the plant to a local institution, and then reorient MACA technicians to carry out the Certification Service. Some officials in the Ministry were concerned about losing control of the Plant. It took several months of intense effort with the help of a local lawyer and leaders to prepare an acceptable rental agreement between MACA and CIAT. Once this task was completed in 1982, the Certification Service was organized with support of the Soybean Growers Association (ANAPO). In the following years, the program took off. Local soybean seed was well-received in the market, replacing all imports by 1985. Wheat followed easily with the leadership of ANAPO and CIAT; then corn and rice with private growers.

Given the unprecedented experience in Santa Cruz, it was decided to expand the seed program to other regions, again spurred by the need for soybean seed, this time in the Gran Chaco. In this case, we began our involvement with a detailed study and strategy. Because the area is small, the demand for seed is too limited to support a complete seed program. Hence, the strategy was based on the concept that the Chaco has a comparative advantage in seed production due to its favorable climate, and therefore could produce larger amounts, marketing some seed in Santa Cruz. This has worked out as planned.

The program was again expanded, this time out of the tropical regions and into valley areas. This was important in order to demonstrate the practicality of the approach taken in valley and highland areas where small farmers predominate. Many persons argued that the private sector orientation was appropriate only for commercial agriculture, and that the public sector had to predominate in the Andean region of the country. An adviser was posted in Chuquisaca. Leaders from the region adopted the same attitudes as those in other regions. However, there were several modifications that had to be made in the mode of operation. Field practices by seed producers were not so readily changed, probably because they act as cooperating producers and do not get directly involved in marketing. As a result, they have less incentive and are less confident in the market. More emphasis on foundation seed and precise conditioning is needed to compensate for limitations in field practices.

One of the seed technology advisers and a local engineer were assigned to design and install seed conditioning plants. Six plants of modest size were equipped and installed by the Project. Seven others were built by the private sector within the life of the Project.

It has been a struggle to loosen public control of commercial activities and focus on support services. In each region where Chemonics worked, Seed Councils have been formed. Three others were formed in regions that do not receive our direct support. Creation of Regional Seed Councils has been key to success. They not only form policy, but are also operative in that they control funds and personnel for operation of Certification Services. A National Seed Council has been formed, and has prepared a new National Seed Law now being presented to Congress. The law would officially decentralize Certification Services and put them under the Seed Councils in all regions.

The industry has grown beyond anyone's expectations. From a very modest beginning just six years ago, production has grown to over 6,000 metric tons. The total value of seed produced in local prices is between 2.5 and 3.0 million dollars. More than 50 entities now produce seed in Bolivia. All are small companies (including public programs), averaging about \$50,000 sales per year. The largest of these (a public program) produces around \$250,000 worth of seeds each year. Seed imports, previously at international prices of about four million dollars per year, have been virtually replaced with local production. Seed quality has also improved. As a result, soybean yields have increased more than 50 percent in recent years, from an average of 1200 to over 2000 kilograms per hectare. In the case of wheat, over 12,000 hectares are now planted in the lowlands of Santa Cruz, instead of one or two thousand as before. This is because seed is available from valley regions.

An analysis of the economic impacts of the seed program demonstrated that the costs of the entire T-059 Project, in all its components, have already been recuperated by the Bolivian people. This was done only with soybeans, based on increased productivity and lower costs of production.

12. Special studies

Some studies were carried out in support of seed programs; most notable were feasibility studies for seed plants in the Gran Chaco and Saavedra, Santa Cruz. Both were fully operational in 1986. Another was done for a seed plant in Chuquisaca. However, with the low volumes produced in the region, it was decided to first install a smaller plant in rented facilities.

Other studies were carried out upon request from various institutions. A series of reports were done early in the project on fruit and vegetable processing and marketing in Tarija and Chuquisaca. Some of the activities proposed were found to be financially infeasible. None of the activities recommended by the studies was implemented. Another study was done on a projected flour mill in Chuquisaca. We found the environment in wheat and flour markets to be highly volatile at the time, and the project to be risky. Now that government policy is more stable, the mill might receive financing from international sources.

Generally, the studies done in support of on-going activities have been useful and the projects proposed have been implemented. Those done for other entities, especially for the public sector, have not resulted in action.

13. Special training

Local institutions and officials in USAID, especially the Rural Development Officer, Mr. Robert Thurston, began to focus on the need for training in natural resource management during the same period that Chemonics was involved in the soil conservation program. As a result, we were asked to assist with courses in land classification and soil conservation. Other courses scheduled in a longer series were cancelled due to lack of funds and adequate local organization. However, we did follow up with three courses in soil conservation for rural school teachers who are involved in agriculture. Two such practical short courses were given in the Department of La Paz, and one was given in the Chaco.

Though no immediate results from these modest efforts have been seen, the need for further work is evident.

D. ACTIVITIES FOR WHICH CONTINUED USAID SUPPORT IS JUSTIFIED

Results obtained in the seed production program have been excellent. Given the level of activity and interest, it would be easy to assume that the job is complete, and that continued support of a development project is not needed. However, persons who are closer to the program feel that, indeed, the job is only half-way complete. Three out of six regions with Seed Councils have not yet organized certification services, nor have they implemented a chain of seed multiplication. Furthermore, the T-059 Project has worked in only five major crops: soybean, wheat, corn, rice and cotton. We have virtually not touched the most important crop in the country, potato. Also we have not made a significant impact in barley, forrages and vegetables. Perhaps more importantly, some of the seed companies were formed only during the last crop-year. These have received only a minor amount of assistance. (Bear in mind that, even though the T-059 Project has been in existence for seven years with Chemonics, our work in seed production in the Chaco and Chuquisaca has had only three years to develop.)

In the final analysis, most people working in the seed industry seem to agree that seed production in the country should expand to a level between 15,000 to 20,000 metric tons per year. This projected growth implies an annual rate of increase in production similar to that achieved during the last 3 to 5 years --800 to 1000 tons increase per year. More than half of this expansion should take place in valley and highland regions where our Project has scarcely provided assistance.

In conclusion, we see potential for continued, sustained growth of the seed industry in Bolivia over the next 5-10 years. We see the effectiveness of technical assistance and training; the benefits achieved have created an economic impact that more than pays for the costs within the life of the Project. Social benefits are also attractive: formation of local companies (mostly with local capital); increased productivity for a

majority of farmers in regions that form seed programs; hundreds of cooperating farmers producing seed; organization of local institutions; public institutions reoriented to providing services in support of the private sector. Few development projects promise, with relative certainty, to produce results of this magnitude within a reasonable time-frame.

For this reason, USAID has already received several requests for the continuation of technical assistance in seed production. This is a stark contrast to the early days of the Project when foreign advisers were, perhaps, seen mainly as a vehicle to gain access to financial resources of international projects.

The second area which I believe merits USAID attention is in conservation and management of natural resources throughout the country. In this case I do not have the information to demonstrate the probable impacts, nor even to present an order of priority activities. However, anyone familiar with Bolivian agriculture would be equally concerned, especially with the need for soil conservation programs. Fortunately, most Bolivians working in the sector are very concerned, and USAID is providing some support. But it is clear that this endeavor requires much more concerted effort than it is receiving.

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