

THE PROJECT OF AUGUST, 1965:
RURAL INDUSTRIALIZATION IN CHILE

A Report to the Chile-California Program

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1. THE AUGUST PROJECT

1. Background to This Report

In December of 1964 the directors of the Chile-California Program, mindful of the success of the UCLA Project Brazil, by which industrialization of rural communities in the depressed Northeast region of Brazil had been undertaken, asked the writer, who had served with Professor Asimow, the originator of the concepts involved, to come to Chile and explore the possibility of fomenting rural industrialization there. For two weeks in January I toured that part of the country that lies from Santiago southward to Puerto Montt, assisted by my wife and representatives of the Program, and of the government of Chile. The conclusion of this first exploratory trip was that the possibilities of fomenting rural industrialization were most promising in the southern Lake District. I therefore proposed that a program similar to that set up in Brazil be established with headquarters in Puerto Montt, and jointly administered by UCLA and the larger Chilean universities. I further suggested that a second approach to the problem was possible: namely, placing the technical burdens on such governmental agencies as the Servicio de Cooperación Técnica, and supplying assistance from experienced members of the Brazil Project.

In May and June of 1965, this second possibility was explored further in consultations in Los Angeles, and finally it was decided that I would come to Chile for the month of August, 1965, to explore further how rural industrialization could be carried out by visiting consultants and the personnel of the Servicio.

The first week in Chile was spent in reviewing the objectives of the project with the agencies involved, reviewing the background materials which had been accumulated by Servicio people for the Lake district, and

interviewing certain key officials in Santiago who might further give me background information on such questions as the local conditions that distinguished the relative advantages and disadvantages of corporations, cooperatives and partnerships.

Two days were required to go from Santiago to Osorno, where our headquarters were first established; our pick-up truck managed to keep just ahead of the storm that was then harassing central Chile. Eighteen days were spent in the Lake Region, mostly in Osorno. Finally, the last four days of the month were spent again in Santiago, reviewing our findings with Chile-California and USAID officials. This report will deal with those findings; in a separate document specific recommendations for action by the Chile-California Program will be proposed.

1.2 Specific Issues in Question

As a result of the preliminary conferences it was decided that the August Project would provide a case study that would demonstrate the following specific points:

1. Outline of a strategy for small-scale industrial development of the Osorno region,
2. Descriptions of the organizations that need to be involved, and their responsibilities,
3. Description of what would have to be provided at the national level to encourage and support local industrial development,

and, among others,

4. Recommendations on policies, organizations and procedures for carrying out small-scale industrial development in small urban centers.

As will be described in Section 3.1, it was deemed advisable by the Project team to extend the region under consideration to include more than

just the Province of Osorno; otherwise, the activities of the Project were fairly accurately directed to the ends listed above.

I decided at the outset that the best way to get answers to the questions implied in the above-listed objectives was to try to establish some small to medium sized industries, using as a guide our experiences in Brazil; the Servicio people were very much in favor of this idea, since it suggested that one of the possible outcomes of the August Project would be some new companies actually forming and making use of the technical facilities offered by the Servicio. I am pleased to report at this point that this secondary objective was indeed attained.

The team in the Lake Region consisted of myself, Engineers Renzo Trufelo and Enrique Cristi of the Servicio, and Engineer José Petermann of the Faculty of Engineering of the University of Concepción. In Santiago, operations were under the direction of Engineer Juan Walker, who joined us in the Lake Region for the last few days. We were assisted in making arrangements for many meetings in the region by CORFO representatives St. Jean and Grez.

The remainder of this report is divided roughly into three sections. Section 2 deals with national matters that are deemed prerequisite to small-scale industrial development in the rural communities; Section 3 will detail the strategy of fomenting such industries; Section 4 is concerned with the follow-up procedures that go beyond the actual activities undertaken in August; while Section 5 summarizes our findings and attempts to generalize them.

Before proceeding on this schedule, however, it is necessary to make some general remarks and definitions.

1.3 Some General Considerations

The need for small-scale industrialization in rural regions of developing countries is too well known to warrant detailing here. Some general aspects must, however, be considered, in order to understand why certain procedures (to be described in the following sections) were employed.

Foremost among the general aspects of rural industrial development is the fact that while it is in the best interests of the government of a developing country to foment it, it is very difficult for governmental agencies to do it themselves. This difficulty arises when a government agency involved is not sufficiently isolated from political pressures. The success of rural industrialization is significantly dependent upon the selection and demarkation of the region in which the work is to be done. Political considerations, which are of vital concern to most governmental agencies, may often be detrimental if used to choose either the region or the actual industries involved in such programs.

A few words must be said about relative merits of centralization and de-centralization of industry. From the point of view of the economics of production it can perhaps be shown that highly centralized industries are better augmenters of national wealth than widely distributed, smaller industries. On the other hand, if one considers the economics of supporting large urban collections of migrants from the rural regions and if one includes also the economics of underdeveloped rural regions, it may turn out that from the broader view the national industrial development has to be balanced between rural and urban programs. In addition, of course, the social and cultural shocks that result from large-scale migration of labor from the rural to the urban regions tend to argue heavily in favor of rural industrialization.

A third general consideration involves the role of the private sector in industrial development. The history of the world reveals that effective private industrial development can only be fomented by incentive programs. The major incentive for private industrialization is the opportunity for profit-taking. The industries toward which private investors tend to be predisposed are not necessarily those that solve the short-term national programs. (On the other hand, governmental agencies may be preoccupied with just such national programs and therefore may not be the best agencies for the administration of private rural industrialization programs.) This report is concerned entirely with the private sector of industrialization. This is not to deny the value of public participation, but rather to emphasize the necessity for private investment.

Finally, by rural industrialization I mean the industrialization of regions where industries do not normally tend to spring up spontaneously. The word "rural" applies here not because of special advantages of agricultural regions, for example, but rather to point out that spontaneous industrialization programs tend to center in the urban complexes. The program described here is aimed at fomenting industrialization in regions remote from the big cities where the need for job opportunities and local capital formation is otherwise unsatisfied.

The methods used by the August Project are modifications of those conceived by Professor Asimov and developed in the Brazil Project by Professor Asimov and his colleagues, including the writer of this report.

2. PREREQUISITES FOR RURAL INDUSTRIALIZATION

2.1 Government Policies and Attitudes

There are certain general prerequisites that must be present in order to develop the private industrial sector of a country's economy. Foremost among these is a clear, unequivocal government policy that encourages private ownership of capital producing activities and profit taking. Ordinarily, one can find such policies indirectly stated in the tax structure, where for example, a rational profits tax implements the government view of profit-taking. Similarly, graded income tax is at least an indirect indication of favor toward people with smaller incomes, while a graded business-profits tax favors small companies and discourages larger ones. In Chile, however, the tax laws and other indirect statements of policy are considered by the businessmen to be of no value as signs of the present government's intent. Further, what statements have been made tend to frighten would-be investors. Several of the measures that were taken before the election (presumably to stabilize the economy during that period) tend to favor the importer of foreign goods over the local manufacturers. More serious than that, however, is the whole question of private ownership. At this writing, governmental officials are preoccupied with two serious changes in Chilean official policy; The Copper Question and Land Reform. The solutions proposed for the former and the actions taken so far with respect to the big private and church land-holdings (parts of a proposed and vaguely stated Constitutional Reform) have frightened a considerable number of possible investors and developers, who fear that at best, private ownership of industry will be restricted to only small companies, or, at worst: to none at all.

I must add that the fears I have referred to were more manifest in the city of Osorno than they were in Puerto Montt. This may be due to the fact that there are generally more sophisticated businessmen in Osorno, which appears to be a richer province, with less immediate need for development than Llanquihue, where the main city of Puerto Montt is troubled by a serious unemployment due to large migrations up from the south. This generalization must be treated as such; in the province of Osorno, the town of Rio Negro lost its only industry (a flax mill) in the 1960 earthquake, and the local citizenry is desperately looking for another to prevent the town from dying. In the few meetings we had with Rio Negro people, the question of government attitude and constitutional reform never came up. Furthermore, the visiting team spent rather more time in Osorno than in Puerto Montt (fourteen days vs. four). It is possible that a longer stay in Puerto Montt would have revealed the same concerns with the future policies concerning private ownership.

Conversations with individuals in Santiago reveal the same concerns.

On the other hand, before I led the team south, I talked with the President of the State Bank, the Superintendent of Insurance Companies and Corporations, the Director General of the Stock Exchange, and the Superintendent of Banks. All made statements to me that indicated that the private sector was expected to carry a significant share of the burden of the industrial development of Chile, that no serious changes in the doctrine of private ownership were being considered, and in fact that legislation was being drafted that would encourage small investors to participate more than in the past. Yet none of these are known to the people at large.

I am appreciative of the nuances of political life, and the reluctance of officials to state publicly at this time what can be said privately to

visitors and to other governmental employees. Still, if the private sector is to be re-activated, some overt actions will have to be undertaken, as soon as possible.

What is needed in Chile now, to get the private sector moving again, is an unequivocal statement by authoritative governmental officials that describes clearly the role that private investors are intended to play in the development of the country, supported by appropriate tax, monetary and tariff measures.

2.2 Infrastructural Support

I will not add here to all the literature that abounds with statements of the need for infrastructural, or social-overhead, support of industrial development. Rather I will confine my remarks to three aspects of overhead support that are particularly applicable here, and are sometimes overlooked when the elements of infrastructure are listed.

The first of these back-up necessities is a progressive credit institution. I understand that the current plans of the government involve the authorization of the State Bank to issue long-term credits. In my experience, there is no substitute for such credits insofar as private as well as public industrial development is concerned; this view, I think, has no opponents.

Rather, the difficulty I foresee here is the innate conservatism of bankers in general, and the absolute horror of risk that prevails among bankers in a country with severe monetary inflation. This becomes even more exaggerated in dealings between national and regional development banks and small developers in rural industries.

It is in the nature of bankers to prefer to deal with large loans

because these are necessarily fewer and therefore less trouble. Further, people who ask for lots of money generally are experienced managers of profitable enterprises who can pay for the necessary technical assistance. On the other hand, rural industrialization involves the conversion of commercial people into industrialists. They are without manufacturing experience, and, therefore, represent higher than ordinary risks for bankers. It is perhaps unreasonable to expect bankers to absorb all this risk.

Accordingly, I suggest, as Asimow and others have, in private conversations with myself, bank officials and USAID officers, some form of risk-insurance (with protections built in to avoid chicanery, etc.) and/or forgiveability of loans that went bad simply because the promoters of the enterprise were too ambitious, in view of subsequent market behavior, for example. Also, some policy of being less demanding, with respect to the size of the project documents, should be established for the smaller loan requests.

I appreciate that I am anticipating difficulties here where none may exist, but my experiences during the August effort in the Lake Region have convinced me how important long-term credits are for rural industrialization programs. We uncovered four different industrial proposals that had been considered by local people, some even so far as to collect some cost data; but all these projects were lying dormant. One of the reasons was that the promoters had no hope of financing the programs themselves. When the visiting team talked about the availability of technical assistance, the possible availability of long-term credit, and the financing advantages of the corporation compared to co-ops and partnerships, all these projects came to life; companies are now forming to pursue their original objectives.

I do not know how to assign importance to these three new elements

we injected into their consideration, but I am confident that without long-term credits, reasonably proffered, there will be no significant private industrial development in the rural regions.

In the phrase "reasonably proffered" I include not only allowances for more risks than can be taken by commercial banks, but also some reasonable regulations that are designed to offset the inflation of currency. The present preference for readjustment procedures is not the best solution. In the first place, it is itself a discriminating devaluation of the currency in one sector. Also, whereas it appears to minimize the dangers of decapitalization due to loss of value in the currency unit, it makes realistic pricing policy and depreciation accounting very difficult, because of the unpredictability of future such devaluations.

A much better approach would seem to be that previously suggested for other countries: the encouragement of participation of the long-term credit institutions in the equity financing, by means of preferred shares in the companies to which they have also extended long-term credits. Such preferred shares could be made convertible to common shares in proportion as the loan is paid off, and sold to the existing stockholders on a pro-rata basis. In this way, the bank can at least partially hedge against inflation and at the same time not disturb the equity distribution among the private investors in the industry.

I have already alluded to the necessity for governmental technical assistance. This is another element of the social-overhead that is often overlooked in lists; fortunately, it seems to have been allowed for in the present Chilean governmental structure. The Servicio de Cooperación Técnica seems to be capable of supplying the necessary technical back-up for

engineering and economic services that are needed for the development of projects. They also seem to be able to train the necessary technical people for specific industrial jobs. It is perhaps not reasonable, however, to ask a governmental agency to administer the whole program of rural industrial development, unless it can be freed completely from political considerations, and unless it has no other functions such as enforcement of laws and regulations. Further, rural industrialization requires specialized entrepreneurship and management skills which may only be available among private businessmen and foreign advisors.

In this regard I should add that the people of the Lake Region were ignorant of even the free technical services that are available to them; they seemed almost as much impressed on being informed of this kind of existing support as they were by the possibility of long-term credits.

A third element of the infrastructure that was injected early into the study was the idea of industrial parks; i.e., land and supporting utilities and services established in various locations for use (by leasing, perhaps) by prospective industries. My own opinion here is that such facilities are useful only in regions where industrialization has already begun, and surplus capital in the form of bank credit or cash is already available. Otherwise, when industrialization is just beginning, it often turns out that the initial capital is in the form of existing land and buildings, but not so much in cash or credit. In this case, the industrial park does not help. It doesn't hurt, of course, and in other cases it is a positive incentive to industrialization that is often needed. It is not, however, indispensable, as are long-term credits and technical assistance.

Our attention so far in this report has been focused on governmental back-up necessities. Before we can turn our attention to the kind of support

needed from other institutions, it is necessary to examine the procedure by which rural industrialization can actually be done. In this context, rural industrialization is like rabbit stew; it has several ingredients and a long, detailed recipe for construction, which can be laid out serially. But the most important part of the recipe is the first step: catching the rabbit. In rural industrialization this means finding the capital. To do this requires careful selection of the area of operations and then judicious choice of suitable industries, involving possible investors in as much of the planning as is possible. The next two sections of this report will be devoted to a brief description of how this may be accomplished.

3. SETTING UP NEW INDUSTRIES

3.1 Regional Demarcation and Statistics

The existing provincial and departmental boundaries are not always the best boundaries for the purpose of economic analysis. The present geographical boundaries are the result of historical and political interchanges, in addition to being topographic in nature. In general, where the boundaries have been established on geographical features such as rivers and mountain ranges, these serve also to act as economic boundaries. However, not all these topographic features have become provincial boundaries; the province of Valdivia, for example, apparently contains parts of two economic regions.

By an economic region, I mean one that is separate from its neighbors in the location of its major trading center. The centers of activity are easily identified by asking the questions: Where do the people go to trade? Where do the farmers send their products (in the first instance; I do not mean here ultimate destination) and buy the goods they cannot produce? If one examines the map of some generalized geographical region such as the "Lake Region"... which geographically is comprised of the Provinces of Valdivia, Osorno and Llanquihue ... and then asks the questions with respect to each village and center of population, one can construct "economic divides" that limit separate economic regions. Thus, the divide that separates the regions centered in the cities of Valdivia and Osorno is not the common boundary of their provinces; rather it is a broken line that runs approximately from Puerto Nuevo on Lake Ranco (to the west), northeast to include the city of Paillaco in the Osorno region, then southwest to include also the city of La Union, and only from that point to the ocean do the economic and provincial boundaries have a common site: that

part of the River Bueno. The southern boundary of the Osorno economic region is roughly the same as the provincial boundary that separates it from Llanquihue. Thus we have defined the economic region of Osorno. (Subsequent, more detailed studies may reveal misjudgment on my part, and over-reliance on what I was told in Osorno ... I had no Valdivia informants ... as to the true location of the northern boundary, but I do not think I was very far wrong.)

The remaining question with respect to defining economic regions relates to their size. For example, by confining our attention to smaller regions, it is possible to define a separate La Unión economic region. In the question of size-of-region, here one must rely on judgment based on the nature of the industry being considered. Thus, La Unión is an economic region that is separate from that of Osorno if a bakery is being considered; it is part of the Osorno region when one considers the tanning of leather for the Santiago market.

In fact, when one considers industries that are bigger than can be considered artisan-oriented even the Osorno region is too small; rather it is my judgment that, for purposes of rural industrial development, the economic region of Osorno, whose northern boundaries are described above, must be considered only the northernmost part of a bigger region that has two significant centers: Osorno and Puerto Montt, the latter serving as the economic center of a region that probably includes all of the Province of Chiloé, and probably that of Aysén as well. Such a region, whose population is about half a million people, is probably capable of supplying about five million dollars worth of local capital, enough to supply 60% of the capital

required by forty industries of average capitalization equal to \$200,000, giving direct employment in the industrial sector to about 1,800 people and paying about one and a half million dollars per year in local wages, all in about twelve years time or less. After that, the growth should be correspondingly faster, building up exponentially for a few decades. These estimates are based on the following experience during an eighteen day sojourn in Osorno and Puerto Montt by the project team.

During that time we assisted in the definite formation of four new companies, and the beginnings of four others. The average total capitalization of these companies will be \$200,000; on the average there will be one employee for each \$5,000 total capital, and the average profit will be about 50% before taxes. It is reasonable to expect that, in a few months time, ten such industries could be set up as a starting phase for a rural industrialization project. It was postulated in every case that 40% of the capital would come from long-term credits. Thus, about \$1,200,000 could be raised as equity capital locally in the "first wave". Assuming two years are required to reach full operation, and reinvestment of 25% of the capital each year, it is seen that in six years a second wave can be launched, and the growth can continue exponentially with a doubling time of six years, if no other capital were mobilized than that required for the first wave.

However, this first-wave capital represents only about 1/4 of the amount that I estimate would be locally available if there were none of the present flight of capital out of the region (to Santiago and foreign markets for savings accounts and in importation of foreign items of conspicuous consumption). Thus, in principle, the process of industrializing the region using local capital could proceed four times as fast as I have indicated.

Also, in this analysis, I have not included influx of capital to the region from investors in the north who might easily double that rate. An optimistic analyst might then say that it is possible, by this method of small/medium-size industrialization alone, to create 1,800 jobs in six years, and double that increment each six years. Since the population growth rate would probably not have a doubling time of less than about twenty-five years, it is seen that it is possible, by this means alone, to increase the per capita income of the region by a significant amount.

The population of the region is now about half a million; the fraction of the employed who are working in the industrial sector* is currently about 16% of those who have jobs in Osorno and Llanquihue.** In Chiloé and Aysén the fraction in industry is probably much lower. In the whole region, I estimate that 20,000 people are engaged in manufacture out of 200,000 who work. If the most optimistic view of the analyses I gave above is used, and one assumes an average growth rate of 2% in job population, starting with 200,000, and the addition of 1,800 jobs in six years, and doubling the increment every six years (12% average growth rate) one arrives at the following results:

* That is, who are engaged in manufacture.

** Where I use population statistics, my source is Sintésis Económica de la Región de Los Lagos, a set of background notes prepared by the Servicio de Cooperación Técnica in 1965 using 1960 figures and covering the Provinces of Valdivia, Osorno and Llanquihue.

Table I. POSSIBLE EFFECTS OF LOCAL CAPITAL ALONE: THE LAKE REGION

<u>Year</u>	<u>Job Popula- tion *</u>	<u>No. in Industrial Sector **</u>	<u>Fraction in Indus- trial Sector</u>
1965	200,000	20,000	10.0%
1971	225,000	21,800	9.7
1977	254,000	25,400	10.0
1983	286,000	32,600	11.4
1989	322,000	47,000	14.8
1995	362,000	75,800	20.9

* Assumes 2% increase per annum.

** Assumes 1,800 employees added in six years; increment doubles every six years.

It is clear from these figures that while the type of rural industrialization that is our subject is insufficiently powerful by itself to maintain the current value of the industrial fraction in the short run, it is capable of improving that ratio in the long run, again remembering that the best efforts and maximum success in the plan are assumed. The end result would be a developed region in 30 years.

It might well be argued that the relatively high profit level of 50% and the reinvestment level of 25% cannot be maintained after the first wave or two, but the expectable decrease would, I am sure, be more than offset by the increasing flow of capital into the region, once the initial successes have been demonstrated.

The present trend in the region is much more depressing; population is increasing faster than the jobs that are available. This is undoubtedly offset by an exodus to the industrial centers to the north. When they emigrate from the region, workers take others with them. In this sense, the above figures could be used to show that by four such regional industrialization plans as we are considering, perhaps a million people will have

remained in those regions between now and year 2000 who would otherwise have gone to the big cities. Rural industrialization in several regions could thus decrease the size of the slums in Santiago and Valparaiso by a million people under what they might otherwise have by the year 2000.

We have seen the possible effect on the region studies in August. A smaller region probably could not mobilize as much capital per person. For various reasons neither could a larger region. Geographic barriers, for instance, tend to isolate regions, and make them even more competitive than communities ordinarily are, thus decreasing the value of regional pride as an incentive to capital investment. A second reason for not making the region too large is purely mechanical. The entrepreneurial/technical team must be able to operate from the economic center of the region, while extending its view all the way to the borders. Too large a region would dissipate the team's resources and render it less effective.

Once the limits of the region are clearly established, it is necessary to collect the statistics. In the August project, as in previous efforts, this has required a considerable amount of guesswork and interpolation of only imperfectly known local, regional and national statistics. Ideally, a team of economists and geographers should be employed to advise the team of the region's boundaries and such of its statistics as the population, how it is proportioned among the different economic sectors as well as geographically, the natural resources of the region, its exports and imports, and so on; in fact, all the statistics that go into determining the balances of trade and payments and the other indicators of the economics of a whole country. In this regard, I was told that the Intendente of Osorno Province was setting up "customs stations" at the borders to monitor the flow of goods.

The main reason for the statistics is, of course, to serve as a basis for the preliminary selection of industries to be set up in the region.

3.2 Selection and Establishment of Industries

Once the input-output statistics of the chosen region are known, one uses them to make a preliminary selection of industries suitable for the region in much the same way that one does for a whole country. One looks for means to reduce imports, increase exports, and increase the value added to raw materials that previously were merely exported. The most obvious industrial choices are those that are presented by the all too typical situation of a raw material (such as animal hides) that is exported to the industrial centers of the country for fabrication (tanning and shoe manufacture, for example) and then imported back into the region (as shoes), paying the freight both ways, and increasing the capital outside the region. One would be criminally negligent, it would seem, not to investigate the feasibility of both a tannery and a shoe factory in such a case. (Actually, both were considered in the August effort; only the tannery was deemed feasible for the Lake Region.)

At this stage, the pattern of regional industrial planning diverges from that of national industrialization, for several reasons. The first of these is that one cannot count on import-tariff barriers to help the new industry (nor should one); the second reason is that only small- or medium-sized plants can be expected to be financed (even only half-way) with private capital; a third is that private investors cannot be asked to be responsible for "strategic industry" selection or "balanced growth" or whatever is the favorite theory of governmental and university economists. The industries that are to be the means of mobilizing local capital must be

those most likely to make the most profit. There can be no other criterion for the use of private capital. Although the procedures used by the entrepreneurs should include appeals to regional pride, and general concern for one's unfortunate fellows, the fact remains that profit is the best incentive.

But it is not only for the purposes of arousing the interest of prospective investors that the industries must be profitable; it must be borne in mind that only by generating surplus capital in the first wave of industries can a second wave even be thought of. Thus, the first long list of possible industries must be whittled down to a shorter list of the most profitable-looking ventures. Some of these may be discarded for other reasons, but only the profitable should be included.

Our experience during the August effort may be used to demonstrate these points. Our studies in Santiago at the Servicio de Cooperación Técnica suggested that the present wealth of the Lake Region, which is largely the result of agriculture, animal husbandry, forestry and fishing, should lead us to consider the following industries (listed by product):

1. Meat Products (sausages, etc.)
2. Leather
3. Milk Products (casein, etc.)
4. Furniture
5. Agricultural Implements
6. Veterinary Instruments
7. Animal Feed
8. Fishing and Sporting Goods
9. Hardware and other locally consumed metal products.

In addition, during our first few days in the region, we added the

following products, most of which were suggested by local citizens at meetings we held:

10. Potato Products
11. Apple Products
12. Canned Seafood and Fish
13. Prefabricated Housing
14. Calcium Products from Sea Shells
15. Toys* and Children's Furniture
16. Fish Meal*, Dried Fish, Frozen Fish
17. Ice
18. Boxes
19. Cans

and so on. In all, thirty-seven different variations of these and other products were considered.

This list was then reduced to a list of twelve industries, largely by intuition on our part, but also because of local interests which had become apparent. We then undertook feasibility studies, using the market analysis and technical assistance efforts of the Servicio offices in Santiago as well as assistance in local market studies provided by hired students of the local agricultural school. The result of these studies is summarized very briefly in the following table:

*Originally suggested by my wife when we visited the region for a few days in January.

TABLE 2: INDUSTRIES SUBJECTED TO
PRELIMINARY FEASIBILITY
STUDY

INDUSTRY PRODUCT AND ANNUAL CAPACITY	NO. OF LABORERS	ESTIMATED TOTAL CAPITAL REQUIRED US\$	ESTIMATED PROFIT BEFORE INCOME TAXES (% of total capital)
1. Production of CaCO ₃ from Shells (b) (8,600 tons)	30	42,000	52%
2. Tannery (a) (15,000 head)	15	162,000	27%
3. Wool yarn spinning (b) (120 tons)	36	139,000	160%
4. Shipbuilding & repair (b) (1,000 tons)	60	177,000	75%
5. Fresh Meat Products (a) (530 tons)	66	246,000	45%
6. Children's toys, furniture (a) (200 tons)	9	92,000	52%
7. Apple champagne (b) (720,000 liters)	6	195,000	35%
8. Parquets (a) (20,000 sq. metres)	16	122,000	35%
9. Slaked lime from shells (a) (2,400 tons)	24	121,000	10%
10. Ice (b) (3,000 tons)	9	43,000	13%
11. Pressed Wood (b) (5,000 tons)	30	403,000	91%
12. Fish and Seafood Cannery (a) (375 tons)	81	343,000	33%

NOTES:

a) Suggested by the visiting team

- b) Suggested by local interesados. Nos. 1, 3, 4 and 11 had in fact been thought of before we arrived and some cost data had been obtained but were lying dormant.
- c) Still another profitable industry was considered but not included in the August Project because of its size. This would be a plant for the manufacture of Portland cement from sea-shells, producing about 40,000 tons per year using charcoal in a briquetted process, fired in a vertical shaft kiln. Very sketchy pre-feasibility studies suggest the need for such a plant, which involves a total capital of the order of a million and a quarter dollars, and which would use only a very small fraction of the known sea-shell deposits in the islands south of Puerto Montt.

Of those shown on this list, Nos. 9 (ice) and 10 (slaked lime) were dropped because of the low profitability; Number 8 (parquets) was dropped because of insufficient market and too much competition. Of the remaining nine, Number 7 may be more trouble than it is worth since the liquor tax situation is not clear. Thus eight industries remain of interest after eighteen days of study.

It was noted that the list shown in Table 2 was partly based on local interest. This is an important facet of the feasibility study phase of private industrial development. No industry can be formed unless someone is interested enough to invest in it. In the rural regions, it is not often one encounters people with sufficient sophistication to want to invest in any profitable industry -- one must capitalize on their predispositions.*

*Notwithstanding this fine paragraph, I must confess that my own biases intruded in at least one case. A group of people from Río Negro, the small town in Osorno Province that I said has no industry at all, asked us to study the feasibility of a spinning mill for wool yarn (No. 3 in Table 2). I tried to turn them to another interest because I thought that too much capital would be required. (This was our experience with respect to cotton spinning when we considered it for our project in N. E. Brazil.) But they insisted; so, against my judgment, we did a quick feasibility study and found that the equipment was not so expensive after all, and the profit margin probably the highest of any.

The sooner that possible investors and promoters are made to become involved in each project, the more likely they are to remain involved. Further, they are a good source of information on raw materials availability, and prices and trends.

In general, the process used during the August project for setting up a company was a modification of that developed by Asimow in Brazil and consisted of the following steps:

1. General meetings with the important members of the business community, local government officials and service club members, explaining the general intentions of the project, and soliciting their assistance for data acquisition and designation of possible interested people in the community.
2. Later meetings with smaller groups suggested in the first general meeting, discussing separate industrial possibilities of interest to those present.
3. Begin pre-feasibility studies, using local people for local information on markets, availability of raw materials, prices, etc., and the main Servicio offices in Santiago for preliminary designs and capital cost estimates, as well as national market studies and international, if applicable.
4. Meet again with the small groups discussing the progress of the pre-feasibility studies and getting their suggestions as to possible stockholders and organizers.
5. As soon as the first clear indications of feasibility are obtained, the team meets with the people most likely to be the promoters and stockholders and suggests that they form a company on the following general scheme.
 - a) Organize the company by obtaining promissory notes from prospective shareholders who agree to purchase shares in the company when the banks have indicated willingness to loan the money that will be needed as long-term credits (in every case in August, 40% of the total capital required, including working capital, was to be supplied as long-term credits at unspecified terms, while 60% was to be obtained as land, buildings, raw materials or cash for shares.) Each promissory note is to be accompanied by some sort of down payment while the rest is to be collectible when the loan is granted.
 - b) As soon as cash, land, buildings and/or raw materials adding up to about five or ten percent of the equity capital is promised

for immediate delivery, the organizers are instructed to write to the Director of the Servicio and so state, and formally request the Servicio to prepare the definitive project for the bank.

- c) While the project is being prepared, the organizers solicit further subscriptions for shares, hopefully having found all the equity capital by the time the project is submitted to the bank.

When item 5b, the request for the definitive project, is completed, the company may be said to be formed. It is my expectation that by the end of September, 1965, companies will have been formed for the first six of the industries listed in Table 2 and that the last two on that list will have reached stage 5b by the end of October. The remaining four on the list should probably not be pursued this year, as discussed earlier. Thus, the end of the month of October should see eight companies formed (as defined above) and the Servicio busy with the definitive projects for eight bank loans totaling about 640 thousands of dollars (U.S. equivalent) while the region should be swarming with organizers selling shares for an additional 960 thousands of dollars of promises to pay when the credits come through.

If these expectations bear fruit, this will constitute enough, or almost enough, industries for a first wave of industrialization of the Lake Region, although no new proposals from local citizens should ever be turned down except for inherent infeasibility.

In the ways just described, companies are formed; yet a long way and a lot of work remain before the company is in successful operation. It has been said often enough that it is much easier to start a company than to keep it going. The intermediate step of getting it into operation must also receive detailed consideration. However, our experience in Chile during the August project was not long enough to allow us to determine all

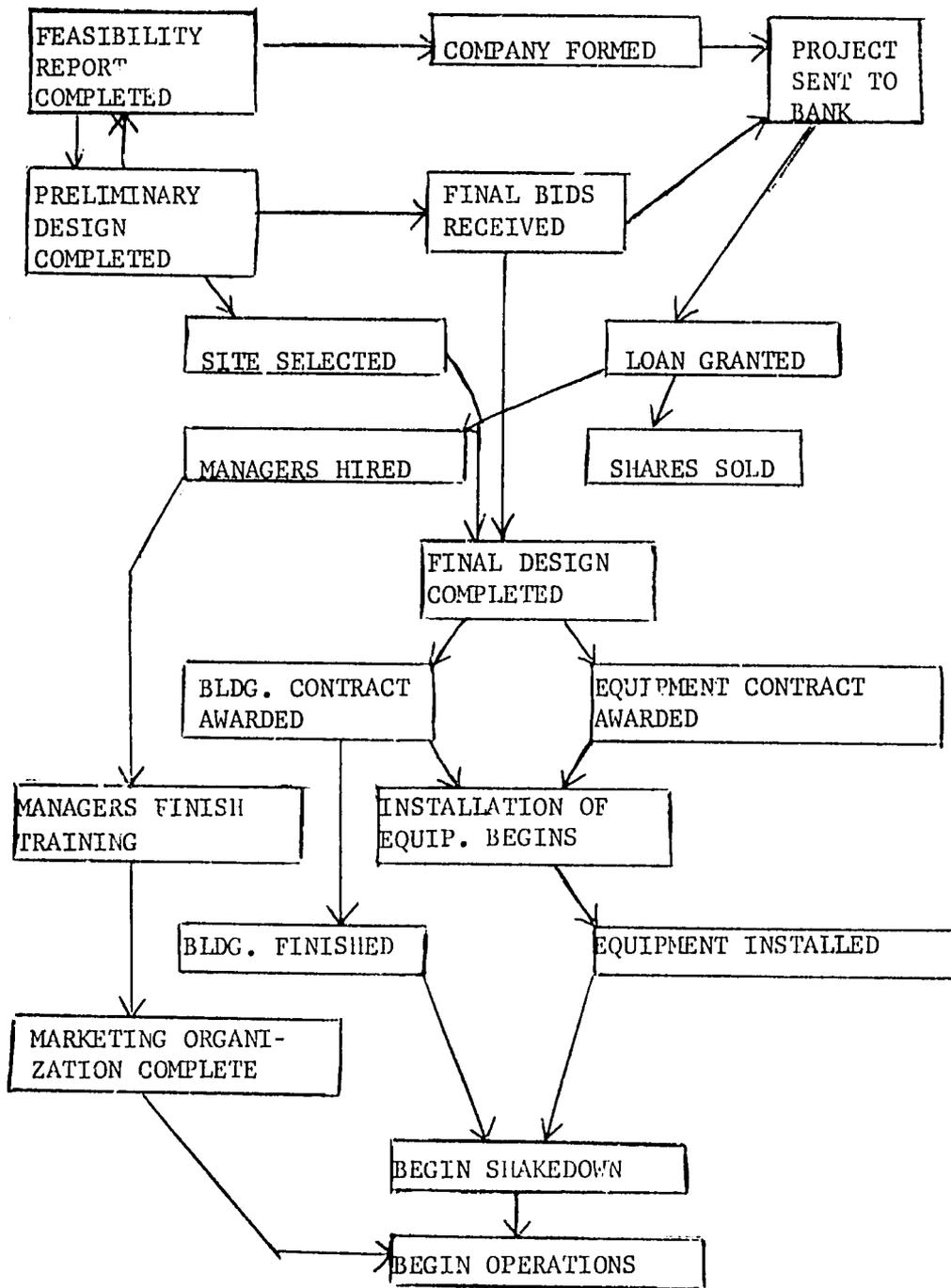
the factors involved in the actual practice of getting the industries into operation there. Here, therefore, I will rely on our experience in Brazil, which is so similar to American practice, that it must be suitable for Chile as well. The main distinctions in procedures of rural industrialization, between different regions, that is, are manifested mainly in the setting-up, not in the follow-up procedures to be described in the next chapter.

4. FOLLOW-UP TO SUCCESSFUL OPERATIONS

4.1 Flow Chart of Procedures

It is difficult to describe in words all the operations that are involved in setting up a successful organization, once the pilot company is formed. The details of the steps involved necessarily vary from company to company as well as from product to product. However, in order to clarify certain points, and at least to indicate the time sequence of the major events, a schematic flow chart is shown on the next page. As a bare outline, it will suffice for our purposes in this report; the actual steps are much more involved and require expert guidance all along the way.

The first important aspect of the follow-up beyond the stages reached in the August project is the long wait for the investors from the time they ask for technical help in preparing the bank project until the loan is actually granted. I estimate that three months, on the average, will lapse before the completed projects can be presented to the Banco del Estado for the loans, and another three months waiting for the Bank to grant the loans. At periodic intervals during these six months, both the Servicio and the Chile-California Program, in whose name I acted, will have to meet with the interested people, if only to reconfirm our interest in their success, to reassure them that they have not been forgotten, and to encourage them in the sale of shares. At the same time, such liaison personnel as will be involved could be studying the possibilities for new industries for the region. I think that visits of one or two people of the Servicio every three or four weeks should suffice for this purpose. Of course, there will arise, from time to time, questions about the project itself that will require conversation with the investors. These should be face-to-face



and as often as needed.

Once the loan is granted, the kind of technical assistance needed requires much closer contact between consultants and the company. This phase of operations, which will be detailed in the next section, should be carried on simultaneously with the initiation of operations in a new region, in order to forward the progress of the overall rural industrialization of Chile. For this reason, I suggest that private consulting firms be asked to carry on the assistance to the various companies once each has received its loan, while the Servicio people are then freed to concentrate on both second-wave industries in the same region and first-wave industries in a second region.

4.2 Technical and Managerial Assistance

The important phases of post-loan development of each of the industries, keeping in mind only the differences that are involved between setting up new companies in a rural region, as compared to normal industrial development, center on aspects of selection and training of personnel and getting the plant into operation in such a way that by the time the shakedown phase is complete and normal operations are to begin, the personnel of the company are generally well-trained for their tasks and at the same time specifically trained for the details of management of the particular plant.

Although I had only a few weeks in which to assess the capabilities of the local people, I feel that the general managers for the enterprises already started could be found locally. In each of the groups of investors who are currently banding together to form the companies, there is at least

one who could, with the appropriate training, become the general manager. The technical manager, where one is needed (in nearly all cases), will probably have to come from outside; however, I would look first for engineers who are now in the big urban centers, but who were born in the Lake Region. I suspect that the needs for technical managers can be largely met from this source.

Wherever possible, the machinery for each plant should be purchased from a single source.-- ideally, the plant should be obtainable as a turn-key package from a single supplier. Unfortunately, this is all too rarely the case. Technical assistance must generally be provided in selection of particular pieces of equipment that together will make up the whole plant. This is generally true because manufacturers of equipment design each plant separately, as indeed they often must, and these manufacturers, in their desire to sell equipment whose performance they can guarantee (such guarantees should always be required by the purchasers) often tend to over-design the plant. That is, they generally specify too much equipment. For this reason the technical consulting firm hired by the company must pay close attention to the specification of equipment and to the requests for and analysis of bids. However, when much of the equipment comes from a single source, one can also contract for that manufacturer to send crews to install the equipment and possibly also to shake it down, if not actually train the company's own personnel on the job. The arrangements for the installation and the training of the local crews and the technical manager are properly the functions of a private consulting firm who will assume the responsibility for performance, whether or not the manufacturer is willing to furnish personnel for the beginnings of operation. The consultants should

also assume the responsibility for training the manager, as well as the shift-foreman and laborers.

In addition, the general operations of management and production should be set up by the consultants working closely with the directors of each company. Production routines, cost accounting, general accounting, materials procurement, marketing, sales and advertising, as well as maintenance, repair and replacement schedules -- all these must be established in the best possible way for each company according to its own needs.

At the same time, keeping in mind the need for the most rapid multiplication of the successes of this plan for the rural industrialization of Chile, the Servicio, under whatever administrative schemes are employed for carrying out this broad, nation-wide program, must be fomenting new industries elsewhere, and encouraging the formation of the second wave in the Lake Region.

Detailed recommendations in this regard will be submitted in a separate document. Let it be said here, however, that in the eyes of would-be investors elsewhere in the country, as well as in the region where the program starts, the granting of the loans to the first companies will be seen as success; at that stage in the first program, the second stage must be ready to proceed. That is to say, it is my estimate that there is a period of perhaps six months in which the Servicio people, in addition to preparing the definitive projects for the first companies, must also be preparing the antecedentes, the background data and statistics, for the next region.

Finally, it should be noted that the long-term continuation of such programs must rely on the availability of well-trained national engineers and managers. Such a long-term need for planners, entrepreneurs, and

general consulting services in economic analyses, engineering and business administration can only be met by strong programs in the universities in Chile.

5. THE ROLE OF THE UNIVERSITIES

It will have been seen by now that the universities in Chile will be involved in the rural industrialization scheme in a different way than the universities in Northeast Brazil. Of the three functions: research, technical assistance, and administration, the Brazilian universities, in cooperation with North American counterparts, were expected to be involved in all three; whereas, the August project has demonstrated to my satisfaction that the technical assistance needs of Chilean projects can be satisfied more rapidly, if not better, using the pool of talent of the Servicio's offices in Santiago. Certainly the technical assistance rendered by the Servicio during the August effort enabled us to progress more rapidly than we could have using North American and Chilean graduate students and university facilities. The administration function in Chile was in effect supplied by UCLA, in the person of myself, who played the role carried out by Asimow and his colleagues in Brazil, although I had no direct University assistance during the August experiment. Engineer Petermann, although a member of the faculty of engineering at Concepción, served as an individual, during the August effort, assisting me in both technical and administrative matters, as did Engineers Walker, Trufelo and Cristi. We demonstrated then that graduate students (or sixth-year students in Chile) are not necessary to the first stages of a rural development program in Chile. (We hired students from the local Agricultural College to do the interviewing for certain local market studies. This is an exception to the preceding sentence, but an essentially trivial one. Students at any level, even the secondary, could have helped here, though perhaps not as well or as efficiently as the young men we employed.) I repeat that the graduate students and young faculty members, who were

indispensable in N. E. Brazil in the initial as well as the later phases, were not necessary in the initial phase in Chile.

This difference seems to reflect two cultural differences. First perhaps university people were required in Brazil because the nationals were highly suspicious of government officials, at least when Asimow started there in 1962, and secondly, there simply were not enough engineers, economists and agronomists to provide in N.E. Brazil the technical assistance rendered by the Servicio in Chile.

That the universities did not play an essential role in technical assistance during the August effort does not mean that they could not have; all I am saying is that we experimented without their technical assistance and moved as fast as we dared hope to. Conditions in Chile might be such that the use of exactly the same arrangements with UCLA and one or more universities in Chile could have moved as fast or faster than we did, and even may have done it better. But this is conjecture; we know that they are not necessary for technical assistance in the setting-up stage.

With respect to research and education, however, an equivalent experiment, such as ours with respect to technical assistance, would be silly. The universities in Chile are indispensable when it comes to long-range supply of the technical personnel needed, not only by the Servicio, but by all the sectors of Chilean government and private enterprise, and also they are indispensable as centers of research and teaching where the methodology of rural industrialization must be constantly examined and improved.

To this end, and to the end also of helping to keep the administration of the projects as free as possible from political influence, the Deans of Engineering, Economics and Business Administration of the University of

Chile, the Catholic University in Santiago, and the University of Concepción* could be used as a pool of advisory talent, some of them serving as technical and policy staffboard for the executive of the rural industrialization program. From time to time, such a panel could be assisted by U.S. university personnel.

I know that the record of cooperation among Chilean universities is not a great one, but I feel the necessity for such a cooperative effort to be so great as to demand the attempt. There are three factors in this situation which should tend to minimize the inter-university rivalries which might appear a priori to invalidate the scheme. First, they will not be directly concerned with university business, but rather with the nation's business; second, at the Dean level, rather more cooperation can be expected than at the level of the Rectors; and finally, I have talked with most of those deans and all of those that I talked to demonstrated that they wanted to cooperate with the others in helping to administer a program of rural industrialization.

Finally, the rural industrialization projects will serve as excellent testing and practice grounds for professors of economics, engineering and business administration, and their senior students. This so vital part of the education of the future leaders of the country may perhaps not be available elsewhere. If not, such university participation in the field should be supported by AID or GOC funds.

* I limit my list to these three universities only because I have not first-hand acquaintance with the others.

6. CONCLUSIONS

The experience related in the other sections of this report lead to the following general conclusions with respect to the feasibility of establishing new private industries in the Lake Region of Chile:

- ... There is no lack of private capital for such ventures
- ... Up to now, the lack was for long-term credits and technical assistance
- ... With such credits and technical assistance becoming available, and with sufficiently detailed, day-to-day follow-up by industrial consultants, the industrialization started by this project would effect a significant increase in the economic well-being of the inhabitants of the region within a period of twelve years.

The success so far attained in the Lake Region and the conditions in other regions suggest that the same benefits can be attained in such other regions of Chile as that centered on Arica and possibly also in the regions centered on La Serena/Coquimbo, Iquique and possibly also Talca/Linares.

All this is predicated on close, encouraging follow-up assistance to those who are risking their capital and provision of long-term credits from such an institution as the Banco del Estado and/or a private development bank.

Finally, it now appears that one or both of the two methods of fomenting such development -- the Asimow-Brazil approach using universities and this effort using governmental technical assistance -- is probably applicable to many if not all the emerging nations when properly combined with public industrialization programs.