

**FACTORS CRITICAL TO THE FORMULATION AND
EXECUTION OF THE
LAJA DIGUILLIN TRANSBASIN DIVERSION PROJECT**

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ABSTRACT

It too often is the case that transbasin water transfer projects, worldwide, could be beneficial to an entire region and are well engineered and yet will never be constructed. This paper reviews social, political, financial, economic, and environmental factors that were dealt with in an effective manner by strong project advocates to realize the construction of the Laja Diguillin Irrigation Project.

The Project is located in Region VIII of southern Chile. It stretches across nearly 100 kilometers of stream-dissected terrain to the south of the City of Chillan. The newly built primary transmission canal was designed to convey 1400 cusecs (40 cumecs) of diverted river flow from the Laja River, across six intermediate streams, to discharge some 28 miles (45 kilometers) distant into a pool created by a rubber dam on the Diguillin River. From this pool at the town of Bulnes the water is to be further diverted, along with flow of the Diguillin River, into a system of large primary irrigation canals.

This transbasin diversion project was designed to provide economic uplift to the farmers of the region who had not participated in the near countrywide economic boom of the 1990s. Thus the Chilean Government chose to plan, design, and build the project while still maintaining the principle that the private sector should own, operate, and maintain irrigation projects.

Additionally, the Directorate of Irrigation of the Ministry of Public Works was empowered, after some 50 years without designing a major irrigation project, to carry out with government financing the Laja Diguillin Project. The coalescence of factors that the Ministry recognized and made effective accommodations for may be grouped into four categories. They were: 1) advocacy, which was strongly provided by Directorate personnel; 2) social, characterized by the challenge to integrate newly enfranchised irrigators with existing water users and their organizations; 3) government, which as a dynamic emergent democracy with an established bureaucracy of skilled technocrats and economists was flexible and able to adopt new or innovative approaches; and 4) competing interests for water and land, embodied in three groups who actively opposed the project for environmental and commercial reasons.

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INTRODUCTION

The Laja Diguillin Irrigation Project was the only major transbasin irrigation project to be designed and constructed by the government of Chile during the last half of the 20th century. Several factors were responsible for the long period between projects. Foremost was the fact that irrigation systems traditionally have been constructed and operated by private interests. Of equal importance, perhaps, has been the turbulent political process coupled with high inflation and a lack of financing for the realization of social goals through intervention by the national government. The emergence during the 1990s of a dynamic economy that accompanied the peaceful transition from dictatorship to an elected government, alleviated prior constraints that had precluded government support to increase the irrigated area of Chile.

The province of Nuble, Region VIII is one of 13 regions of Chile. It embraces an area approximately 90 miles (150 kilometers) north to south across the breadth of Chile and is some 240 miles (400 kilometers) to the south of Santiago. Rainfed winter wheat is grown across the uplands of the region while summer crops are watered by gravity flow from temporary diversions along the streams. Irrigation water supply often is inadequate late during summer (December until the March harvest). Many smaller landholders have little or no irrigation water.

Chile witnessed rapid growth of the economy during the 1980s and 1990s. However, much of the agricultural areas of Region VIII, including the Sectors of Yungay, Pemuco, El Carmen, San Ignacio, and Bulnes, did not share in the growing prosperity. Thus, the federal government decided that it was essential to provide the means for irrigators to firm up water supply during the dry season, to extend irrigation to heretofore un-irrigated but commandable acreage, and to provide irrigation to landowners along the proposed main canal alignment who were growing only rain fed crops. In all more than 3000 landowners were to be benefited.

Thus, the Laja Diguillin Project was formulated to achieve social and economic goals along a 100-kilometer corridor of Region VIII. This uplift of an economically depressed area was to be achieved while recognizing and addressing factors favoring the project and countervailing factors that negatively influenced project formulation and realization.

Social – Organizations of water users (Juntas de Vigilancia) already existed and operated chartered private systems based on natural stream flows and water rights inherited from the Spanish. The Ministry worked with these organizations as the nucleus for the future operation, maintenance, and management of the new system of linked basins that was to serve a greatly increased number of irrigators.

Political/Economic – The popularly elected government of the 1990s was in transition from a dictatorship that had established a bureaucracy of economists and technocrats who administered a policy of user-pays accountability. Yet a social conscience existed which recognized that there were economically disenfranchised elements in society who needed some form of assistance by government. Among those needing assistance were many of the farmers of Region VIII.

Competing Interests for Land and Water – Three groups actively opposed project development. A group at the university in Concepcion undertook, in the name of environmental and recreational interests, to halt the commercial and industrial exploitation of the flows of the Biobio River of which the Laja River is a tributary. Second, the irrigators along the Laja River wished to continue their overuse of water. Third, forestry companies wished to buy the lands of the future irrigators to establish and expand plantations of fast growing timber for marketing as newsprint to Japan and elsewhere.

Advocacy – Technical personnel of the Directorate of Irrigation were dedicated to bringing into being a transbasin water transfer project that made positives of traditional water rights and methods of water control in this economically depressed region.

DESCRIPTION OF THE PROJECT

Geography of Rivers

The configuration of the project owes much to the geography of the region. Figure 1 shows Chile to be 2400 miles (4000 kilometers) long beginning at Arica in the north and extending to Punta Arenas in the south. Its width varies in the region of the project between 60 and 90 miles (100 and 150 kilometers). To the west the country is bounded by the Pacific Ocean and the eastern border generally follows the watershed boundary defined by the Andes Mountains in the north and central parts of the country and by the volcanoes in the south. Due to the short distance from the mountains to the ocean, the terrain slopes steeply to the west and major rivers flow westerly in parallel. The rivers are close together in temperate, humid regions such as that of the project. Morphology of the major rivers, including the Diguillin River is determined by the production of boulders in the upper reaches with cobbled and shingled beds being common in mid to lower channel reaches.

Climate and Agriculture

Summers, December through March, are hot and relatively dry; and winters, June through September, are mildly cold and wet with snow accumulating on the Andes Mountains and locally on the Nevado de Chillan and the Chillan Volcano at the head of the Diguillin River. Snowmelt runoff occurs during the spring and



Fig. 1. Region VIII of Chile

continues into early summer. This runoff and summer rainfall diminishes over time with river flows reaching their minimums during March and April when often the flow of the lower Diguillin River has been diverted in its entirety.

Flow of the Laja River differs from that of the Diguillin River. Laguna de La Laja is a huge lake formed by activity of the Antuco Volcano. Flows seep through the natural dike at the head of the river. Flow also is diverted from the lake for the production of hydroelectric power. Thus, dry weather flows of the Laja River in its upper reaches are nearly equal to those of the wet season. Therefore, the possibility for transbasin diversion to the Diguillin River basin, during the dry season in particular, had been considered.

Winter wheat is grown across the uplands and in some of the lowlands that do not have access to irrigation water. Irrigation water is used for crops such as sugar beets and asparagus and for livestock watering.

Land Use In the Project Area

Some 25,000 acres (10,000 hectares) of land, primarily along the right (north) bank of the Diguillin River, was being irrigated regularly before project construction, Figure 2. The project was designed to serve 160,000 acres (63,000 hectares). About 15 percent of the project area is to be served from the Main (Transportation) Canal. These lands had minimal pre-project irrigation water that was diverted from the small streams crossing the Main Canal between the Cholguan River and the Diguillin River. Some 100,000 acres (40,000 hectares) were to be served from the Bulnes Weir diversion with the remaining hectareage to be served from diversions along the Diguillin River upstream.

Even with completion of the project the lands dedicated to dry land farming will be extensive. However, during project layout, forestry companies were buying lands across the region for incorporation into their plantations. Commercial forest plantations existed along the alignment of the main transfer canal between the Laja River at Tucapel and the Cholguan River crossing. Also, plantations were being expanded through the purchase of farmland in blocks along and beyond the right bank of the Diguillin River.

Economic Conditions

The national economy of Chile had been stabilized and rationalized during the regime of General Pinochet. The banking system had received important government support and had been effectively rechartered, able economists had taken important positions throughout the government, social security and medicare had been privatized and this in turn contributed to the government's ability to mandate inviolable budgets that matched revenues. Regulations and laws were revised to be friendly to "non-hot" capital inflow to the country.

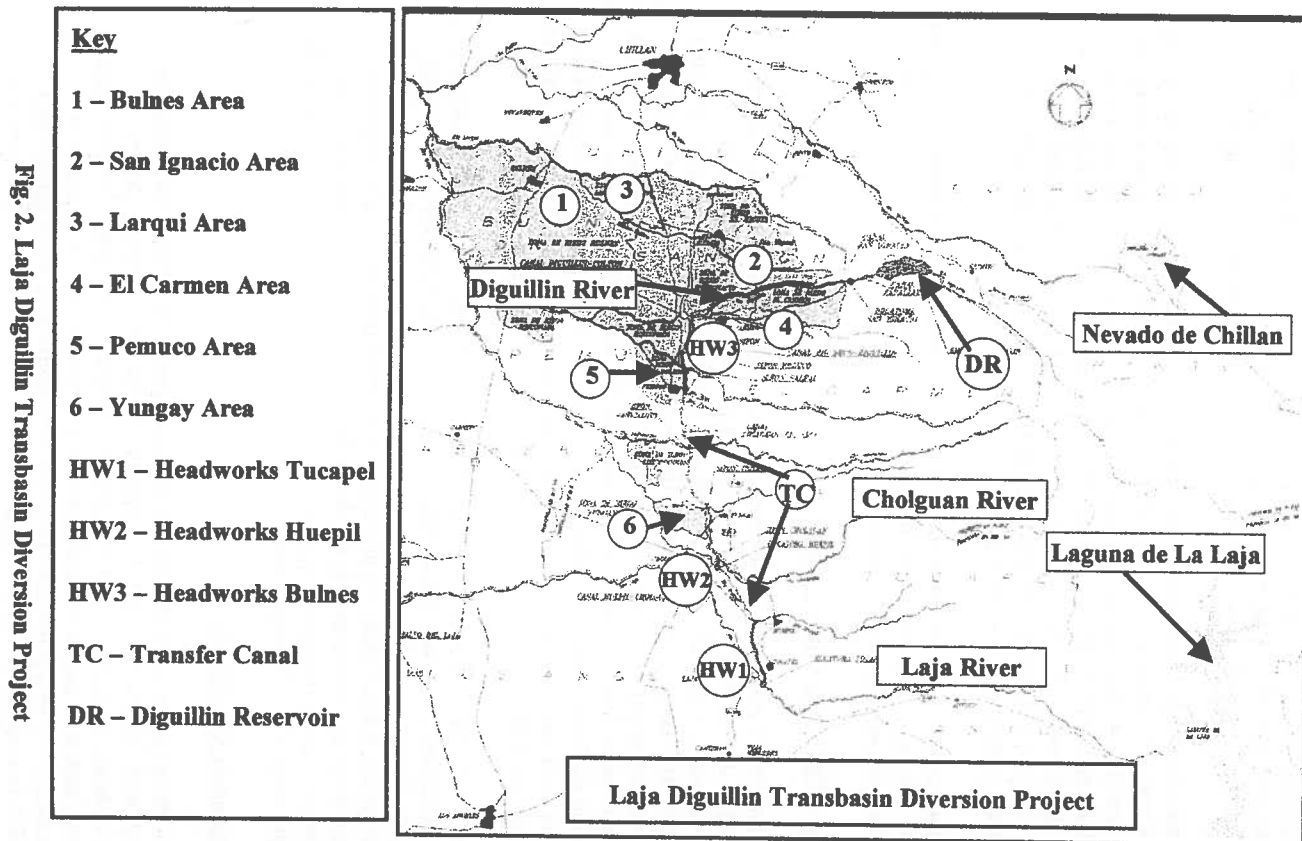


Fig. 2. Laja Diguillin Transbasin Diversion Project

Inflation was minimal and the export of farm and forestry products increased dramatically due to quality control measures and marketing across the world. During the mid 1990s Chile based its budget and governmental expenditures on royalties and returns on copper exports with a price well under one US dollar per pound. The price rose to \$1.25 per pound and revenue increases were considerable.

Prosperity was evident and the inflow of investment capital for mining in particular was massive. Mine development was supported by capital inflows from Canada, the United States, Australia, and South Africa. These funds and the aggressive private sector export drive stimulated wide ranging economic activity and well-being. There remained serious unemployment in areas and strata of the populace that were politically and economically isolated. One such pocket of underemployment and unemployment was the farming areas of region VIII.

Pre-Project System of Ownership, Irrigation Water Use, and Management

Run-of-the-river diversions, during the low flow season, were made from the Diguillin River and other streams through the pushing up of river gravels into dikes that extended part way across the channel. The diverted water was passed along canals that had large losses and irrigation applications were greater than necessary when water was available. However, the system was not as inefficient as it appeared. Throughout the region wasted water and subsurface drainage returns to creeks of the area, and the creeks in turn are used as canals or conveyance channels for users downstream. The system works well because the area is humid, temperate, and suffers little from the effects of salinity. It is a one-crop irrigation regimen and winter rains naturally provide any needed flushing or leaching.

Irrigators had organized as "Juntas de Vigilancia". Juntas are chartered groups of private water developers who have come together for development, operation, maintenance, management of irrigation systems. Juntas along the right (north) bank of the Diguillin River were well organized and effective. They were very important to the Directorate of Irrigation for assuring that designs would mesh efficiently with the existing systems, and even earlier they were key to the program of the marketing of additional project water. It was a requirement of the government that at least 55 percent of the water users with new or enhanced supplies be signed up for purchase of rights to the additional water before design could begin. During project preparation a new private organizational structure was formulated and negotiations were carried out with the water users to assure that the project could be fully turned over to them within 3 to 5 years. Also the sale of water rights continued.

Recreation

The region supports winter and summer recreational activities and provides esthetic backdrops for residents and visitors. The Chillan volcano, at the head of the Diguillin River, is the site of a spa and hostelry with thermal springs and on the slopes of the nearby Nevado de Chillan is a ski lodge and ski runs. The Biobio River, to which the Laja River is tributary, supports white water rafting, fly fishing, and other water sports. Its water also is diverted for industrial use and there are discharges of wastes to the river before it empties into the Pacific Ocean at the city of Concepcion. Salto del Laja is a waterfall located several kilometers downstream from the Tucapel project diversion works on the Laja River. The falls are the site of a popular hotel where newlyweds choose to honeymoon.

PROPOSED TRANSFER OF WATER ACROSS NINE STREAMS

Personnel of the Directorate were very resourceful during project conceptualization. The fundamental project concept is to transfer excess waters of the Laguna de La Laja and the Laja River system to the Diguillin River. In addition the transfer canal will capture, for irrigation, any flows in excess of prior water rights of the intermediate streams between the Laja and Diguillin rivers. Works have been constructed to capture flows of the Huepil, Cholguan, and Danicalqui rivers. In return, approximately 10,000 acres (4,000 hectares) along the main canal alignment will be provided water directly from the main (transfer) canal.

The consultant also was required to design the primary and secondary canals to permit continuation of the longstanding practice of utilizing creeks of the area for both drainage and for supply of irrigation water. This served to reduce construction costs and to improve the efficiency of water use through reuse one or more times along the creeks.

Works for Water Transfer

A 1958 agreement between the Directorate of Irrigation and ENDESA, a power company, was drawn to govern the regulation and use of water from Laguna de La Laja. The Laguna is a lake formed on the upper reaches of the Laja River by a natural dam or dike created by the Antuco Volcano. In its natural state the Laja River passed downstream largely by seepage through the natural dike. An outlet tunnel was built a half century ago to release water to the Polcura River. There are three hydro-electric plants along the Polcura River that generate energy before the diverted water is returned to the Laja River several miles upstream from the Tucapel diversion. It was under this agreement that the diversion to the Diguillin River was to be for a maximum flow of 2,300 cusecs (65 cumecs). As noted later,

to satisfy environmental, recreational, and Laja riparians, the design capacity of the main canal was reduced to 1,400 cusecs (40 cumecs) and design and construction of a dam on the upper Diguillin River was committed.

The main canal (transfer canal) conveyance channels extend some 38 miles or 50 canal-kilometers and 12 river-kilometers from the headworks at Tucapel on the Laja River to the cross-channel weir on the Diguillin River near Bulnes. En route the main canal conveys flows some eight kilometers across country and discharges to the Huepil River, then it flows about 12 kilometers down the Huepil River channel to a cross-channel diversion structure of the project. The canal then traverses a 900-meter wide neck of land before passing beneath the Cholguan River through a double-barrel siphon each with a diameter of 4-meters. The diversions to the main canal at the Huepil River are non-appropriated flows of that river plus the transferred flows. Beyond the siphon the main canal continues about 11 kilometers to the Yungay service area where there are four small low-level offtakes. The intake for capture of non-appropriated flows of the Cholguan River is at the head of this canal reach. Fifteen kilometers of main canal traverse the Yungay to Pemuco sector. The canal passes along this reach through five twin barrel siphons under intermediate streams and there is a radial-gated offtake to serve the Pimuco area. There is an intake structure at the Danicalqui River to capture non-appropriated flows of that stream. The last main canal reach, which ends with discharges into the pool behind the Bulnes weir, is about 15 kilometers long. There are in this reach offtakes to serve three irrigated areas and there are three more twin barrel siphons under local streams.

The primary canal that offtakes from the Bulnes pool carries diverted flow of the Diguillin River and the transfers from the Laja River to the Bulnes irrigation area and through a siphon to the service area along the right bank of the Larqui River. Upstream near the site of Zapallar, limited flows of the Diguillin River are diverted to the San Ignacio and El Carmen areas. These flows that are adequate during normal streamflow years, will be fully firmed up for dry years only once a storage reservoir of some 85,000,000 MCM has been built on the Diguillin River near the town of Recinto. This dam was being investigated and designed outside the Laja Diguillin Project although some of the allocated monies were being reserved for construction of the dam.

FACTORS THAT INFLUENCED PROJECT REALIZATION

Conditions that compelled the government to formulate and proceed with the Laja Diguillin Project, which had evolved within the Directorate of Irrigation over the preceding 20 years, included newly available financing, nationwide prosperity that had not improved conditions for the farmers of the project area, and a long standing commitment based on a 1958 power company (ENDESA) agreement with the Directorate. Conversely, constraints to the project moving forward to realization included active recreation and environmental interests and the forestry

industry that wanted to incorporate most of the project lands into their plantations within the region.

The breadth of constraints and conditions faced in Chile were similar to those faced elsewhere when a transbasin water transfer project is proposed. However, the relative importance of each and their relative effect of one on the other were unique to Chile during the decade of the 1990s. It was the coalescence of these factors and the actions of the government in addressing constraints effectively and in a timely manner that made possible the realization of the project during a single decade. The following is a summarization of recognized constraints and conditions favorable and unfavorable to project formulation, construction, startup and handover to private interests.

Financing

The Government of Chile negotiated at the diplomatic level a loan with the Government of Japan (OECF, the Overseas Economic Cooperation Fund) adequate to finance a substantial portion of the Laja Diguillin Project and several large sewerage projects. Concurrently a loan from the Interamerican Development Bank (IDB) was negotiated for a substantial part of the engineering, project formulation, and construction of the project.

By the mid-1990s there were increases of export earnings from agricultural produce and metals mining that increased substantially government revenues. These additional revenues along with the large capital inflows that earlier had been made possible by favorable government regulations regarding repatriation of earnings, made possible a multi-year delay in the drawing of the OECF funding that carried substantial servicing fees and interest.

It was this available financing that inspired the Ministry to put the Laja Diguillin Project on an accelerated schedule.

Balanced Budget of National Government

By the time budgeting for the project was undertaken, the effects of sweeping budgetary reforms initiated by the Pinochet regime had enabled the government to operate with a balanced budget. The fact of an assured flow of revenues, the available loan, along with a government budget in balance allowed the ministries to operate with confidence to implement priority projects and programs. Balanced budgets were not only assured because of the greatly increased revenues but because government entitlement programs were taken completely off budget.

Social Security and Medical Insurance for all workers had been privatized. The social and medical insurance funds of workers who had entered the work force after a given date were transferred to one of several private companies as chosen

by the worker. The funds for retirement were being invested across the economy by the selected companies, and with the buoyant economy of the 1990s they grew substantially in addition to the employer contribution. The medical funds were paid to medical insurance companies who provided comprehensive coverage. Important to the government was the capacity to accurately provide in the budget for those who already were retired or who faced only a few years of work before retirement.

The government maintained a balanced budget by annually allocating a given budget to each ministry without the burden of unpredictable runaway entitlement programs. In turn, a given ministry was able to carry out programs that used only the budgeted amount. Thus, even though there were foreign loans available for the Laja Diguillin Project, the Ministry of Public Works could not obligate those monies in addition to the budget. Any use of loan monies served to reduce monies available from the budget.

Active Environmental Interests Outside the Ministry

Beyond the environmental analyses and reports required to satisfy contractual requirements of the financing agencies, the Directorate was sensitive to environmental concerns of recreationists, water users, biologists, and commercial interests.

Recreation in the basin of the Biobio River is well developed. The river is scenic in that it and its tributaries rise in the snowcapped Andes Mountains, pass through forested areas, and it exits to the Pacific Ocean after passing through an area of villages and small cities. Water based activities include white water rafting, fly-fishing, and boating. Land based activities include skiing, trekking, horseback excursions, mountain climbing, and camping. Hotels, resorts, and restaurants are located near thermal springs and along the river near some waterfalls. In sum the Biobio River is a beautiful stream that the Ministry did not wish to degrade. Therefore, the Directorate was sensitive to the interests of individuals and groups who expressed concerns about the impact of withdrawals of water from the Laja River an important tributary to the lower Biobio River.

A group at the university at Concepcion had for some time been vocal about the withdrawals of water from the river for industrial purposes and the discharges of the same industries back to the river. After the Laja Diguillin Project was officially publicized, Directorate and Consultant personnel held a workshop and visited individuals to explain the project and to receive feedback concerning what modifications could be made to better address public concerns regarding degradation of the Laja and Biobio rivers.

It was as a result of these meetings, coupled with meetings with other irrigators along the Laja River, and with hotel interests at the Laja waterfall that the original

plan to divert 2,300 cusecs (65 cumecs) was reduced to 1,400 cusecs (40 cumecs) and a dam and reservoir was to be built on the upper Diguillin River.

Socio-Economic Conditions

The farmers of the region were able to grow a crop of winter wheat or pasture due to fairly dependable winter and spring rains. Successful summer cropping depended very much on run of the river diversions of irrigation water. Most years, river flows were too low in late summer to mature crops except on a quite restricted acreage. Irrigation systems thus extended to only part of the irrigable lands and even many of those systems could not be maintained. In fact many small landholders were selling lands to forestry companies. Even with the project, irrigators will be able to mature only one crop per year due to the cold winters.

History of Water Use

Pre-project, along the Diguillin River development for irrigation was as it had been from the time of settlement by the Europeans. Diversion canals had been extended upstream ever farther as each canal was developed for irrigating areas more distant from the river. Consequently, upstream from the Bulnes crossing of the project, there were several parallel feeder canals that lay along the right bank of the Diguillin River. Each canal diverted water successively farther upstream. During low flow periods the irrigators would push up gravel ridges that partially blocked and increased the level of river flow.

The irrigators developed Juntas de Vigilancia, that is groups of irrigators, for the operation, maintenance, management, and financing of sizeable diversion canals and their systems. These juntas were private landowners who were chartered by the government. They functioned effectively to resolve and police water disputes in addition to managing the infrastructure.

It was these same irrigators who made sure that each irrigator got his share whether it was by direct diversion or by reuse of creek flows. Through reuse the irrigators were able to achieve very high levels of beneficial use of diverted waters. This system has been preserved, where possible in service areas of the project.

Water development along the Laja River has proceeded differently from that along the Diguillin River. Laguna de La Laja is a natural lake in the mountainous headwaters area. Its storage capacity is large in relation to the annual flow, and it was natural that early hydropower facilities would be built near the outlet of the lake. The power houses built there were so important to national supply that the level of Laguna de La Laja became an important factor in determining the rate charged for electricity throughout the power company (ENDESA) system.

Because of the importance of power to the pattern of water releases, it became necessary that an agreement be reached between the power company and other water users, in particular irrigators. It was this agreement reached in 1958 that recognized and quantified the need for transfers of water to the Diguillin River Basin. The cross-river structure at Tucapel, which is the starting point for the Laja Diguillin Project, initially was built with a diversion structure on the left bank to serve irrigators along the Laja River. Provision was made for a future diversion on the right bank to support diversions to the Diguillin River. That facility was built as one of the first structures of the Laja Diguillin Project.

GOVERNMENTAL ORGANIZATION FOR PROJECT IMPLEMENTATION

Irrigation traditionally has been the province of the private sector. However, the Directorate of Irrigation has carried out a nationwide program of administration of the waters of the nation through the chartering of water user organizations and the allocation of rights. Also the Directorate has a tradition of planning and building major structures in concert with major hydropower developments and when necessary for transbasin diversions and long distance transport of water. Thus, the Ministry was able to implement the necessary programs to:

- Market water rights by signing up new water users and allocating additional water to existing water users, all on an equitable basis.
- Account for prior water rights that were downstream from the project along several of the intermediate streams between the Laja and Diguillin Rivers.
- Work with existing water user groups to structure a multi-layered organization to own and administer the project. It was intended that after three to five years of project operation, the government would hand over to this organization the financing and administration of all project works including reservoirs, river structures, and main, primary, secondary, and tertiary level canals.
- Carry out a public information program to educate residents of the region to the benefits of the project.
- Organize and conduct meetings with individuals and groups who questioned the need for the project and those who feared that the project would impact their interests negatively.
- Engage a Consultant to carry out investigations, make special studies, review the planning, design the structures and control system, and prepare contract documents.

The Marketing of Water

Before a consultant was engaged, the Directorate had signed agreements with more than 55 percent of the water users. During the design period, it was

important that the remaining water users commit in blocks to justify the finalization of canal alignments and sizes. Among issues that required resolution was how to award rights to those without financial resources.

Meetings and Workshops

Meetings, workshops, and negotiations that were carried out were:

- An informational meeting that was conducted with a group of professors, students, water users, and citizens at the university at Concepcion. The social objectives and design of the project were presented along with an in depth discussion of the hydraulics and hydrology of the project and the impacts on the streams of the region. It also was explained that the Ministry had reduced the diversion capacity of the main canal from 2,300 to 1,400 cusecs (65 to 40 cumecs) and that a reservoir on the upper Diguillin River had been incorporated into the project to compensate directly on the Diguillin River for that reduced water transfer. This meeting was important in that the activities of project detractors greatly diminished thereafter.
- Meetings between the Juntas and Consultant and Ministry personnel were conducted on a political level in the regional capital of Chillan; in the offices of the Juntas for exchange of technical information; at Santiago to review designs, their efficacy and fit to the terrain and operating practices of the irrigators; and in the field to proof the contract documents. Besides, workshops were held to review the proposed Ministry plan to charter the future operating water user organizations. The Ministry proposal was to transform the Juntas into a multi-layered OM&M Organization which would deal with matters at the farm and tertiary canal level, at the secondary and primary canal levels, and with the main canal, cross river structures and eventually the Diguillin reservoir. Besides the organization ultimately was expected to operate a SCADA system to control diversions at rivers and flows along the main canal and in major primary canals.
- Meetings, negotiations, and legal dealings with forestry companies were contentious and drawn out. The forestry companies attempted to stop the project because they wished to buy up the lands and plant fast growing plantations to supply the world newsprint market. Since forestry company plantations lay astride the main canal alignment, the forestry companies insisted that their personnel accompany survey and foundation investigation crews and that the Ministry insure their personnel for very large amounts against the possibility that forest fires would be started. Eventually, the matter was resolved and the work was accomplished for the design phase.

In all sectors of the project, forestry companies bought lands that had been earmarked for water deliveries. During the last stages of design some 25,000 acres (10,000 hectares) of additional land was incorporated into the project around the San Ignacio and El Carmen sectors to compensate for lands lost to purchases of the foresters. At Yungay the area was moved to still open lands.

Eventually with patience and persistence the Ministry overcame obstacles created by the forestry companies and the project went ahead.

Environment

An environmental report was prepared for the assessment of impacts of the project along the Diguillin River and for the Diguillin Reservoir. Besides environmental information was conveyed for the entire project to the financing agencies in meetings and in accordance with the requirements of the loan agreements with the Inter-American Development Bank and the Overseas Economic Fund.

SUMMARIZATION OF WHY THE PROJECT WAS REALIZED

The project was realized in a period when the national economy was robust and the government felt compelled to achieve social and economic equity in remaining pockets of those not benefiting or who were disenfranchised. The government was fresh and not saddled with debilitating tradition and procedures. A 15-year dictatorship had only recently peacefully yielded through national elections to formation of an elected Congress and Presidency. The Directorate of Irrigation enjoyed dynamic leadership who had the skill to negotiate with future beneficiaries of the project and to deal rationally and effectively with those who opposed the project. Financing was fully available and the regional government and population wanted the project.