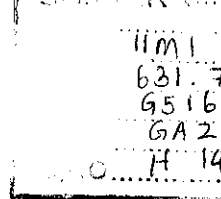
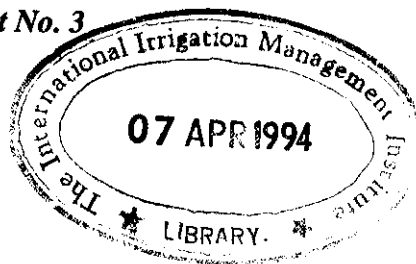


Short Report Series
on
Locally Managed Irrigation



Report No. 3



CHILEAN WATER POLICY

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Purpose of the Series

The *Short Report Series on Locally Managed Irrigation* is designed to disseminate concise information on the role of local management in irrigation and irrigation management transfer or turnover experiences and policies. The Series is distributed worldwide to a broad range of people—policymakers, planners, researchers, donors and officials in both public and nongovernmental organizations—who are concerned with the irrigated agriculture sector. The goal of the International Irrigation Management Institute (IIMI) is not to promote policies such as irrigation management transfer, but to enhance the knowledge base available to decision makers and advisors as they face questions of policy adoption and strategies for implementation.

The title of the Series was recently revised due to suggestions from Network members who saw the need to broaden the scope of the Series to also include issues of the sustainability of locally managed irrigation and support systems.

Locally managed irrigation can be of many types, such as traditional farmer-constructed diversion or tank schemes, indigenous and often new lift irrigation, government-constructed but farmer-managed irrigation systems and systems where management is or has been transferred from an outside agency to a local user organization.

By “irrigation management transfer” we mean some degree of transfer of responsibility and authority for irrigation management from the government to farmer groups or other nongovernmental entities. This generally involves contraction of the role of the state and expansion of the role of the private sector and water users in irrigation management. In other words, there is a shifting upstream of the point where management responsibility and control of the water supply is transferred from the irrigation authority to local management. This may involve changes in policies, procedures, practices and the performance of irrigated agriculture. It may or may not involve “privatization” of ownership of the assets of the irrigation system. The *Short Report Series* addresses questions such as the following:

What are the necessary conditions which support viable locally managed irrigation?

What socio-technical conditions, institutional arrangements and change processes lead to sustainable locally managed irrigation?

What is the range of different models that are being applied worldwide for turnover or transfer of responsibility for local management for recently developed irrigation?

What are the effects of management transfer on the productivity, profitability, financial viability, equity, efficiency and sustainability of irrigated agriculture?

What are the perspectives of farmers, managers, policymakers, urban consumers and other stakeholders in irrigated agriculture about irrigation management transfer?

What adjustments in government may be needed as a result of turnover to provide support to locally managed irrigation systems and to improve productivity in the public sector?

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Water Rights

Transfer of irrigation management responsibility from the irrigation authority to local management places much more of the burden for management of water resources on the local organization. Not only must the local management organization make decisions about how much water is to be allocated where, they also must decide when and what resources they are willing to invest in maintaining and improving the security and quality of their water system. Both allocative decisions and investment decisions require that the water users have assurance of the quantity and timing of their water entitlement.

Given the increasing competition for available water supplies, both within sectors and across sectors, some type of legal right is required to provide assurance of water supply. The ability to trade these rights is also needed in order to allow transfers of water from lower to higher value uses. Thus, the innovative nature of the Chilean water law is very important as a model for other countries to examine.

This law establishes secure water rights that are both tradeable and transferrable as well as having provisions to protect third parties. It also provides for a market allocation mechanism within and between sectors. Local management organizations have the power to settle most conflicts over water, but those that cannot be settled at the local level have a clear judiciary process to follow with a judge making the final decision. The law also has provisions for addressing ownership questions related to irrigation water runoff (tail water) and underground water.

The ability to provide timely information about such an important aspect of local management of irrigation is the reason the *Short Report Series* was created. The editors welcome comments and reactions to this and other reports in the Series.

CHILEAN WATER POLICY¹

Renato Gazmuri S.²

Introduction

In the 1980s, Chile shifted from a system where water rights were State owned, to a system of private enterprise-market oriented rights. The targets of the new water policy were: (1) to increase the availability of water resources through increases in efficiency (both physical and economic) and by exploiting new sources only when absolutely necessary, thus trying to minimize ecological impact caused by the new infrastructure; (2) to improve water quality; (3) to minimize the ecological impact generated by alternative uses; and (4) to avoid, whenever possible, third party effects and, if unavoidable, assure adequate compensation.

The new water policy helped the users to secure water rights, both tradeable and transferable. These rights are expressed in volume by unit of time (liters per second) and proportional allocation when supply is insufficient. In order to achieve higher efficiency, the policy allows for market allocation of water within and between sectors. A unique aspect of the policy is effective protection from "third party effects."

Conflicts between users are handled in most cases by strong and compulsory users organizations that are given the administrative right to solve disputes. In addition, the policy allows for a judiciary solution to conflicts not solved by users organizations or water authorities. As formulated, the Chilean water policy operates through three national authorities:

- * **The National Water Authority** is in charge of establishing original rights, keeping the National Official Water Record, authorizing private irrigation infrastructure, and looking over hydrological (not economic) third party effects.
- * **The National Water Commission** is in charge of the evaluation and, eventually, in coordination with the **National Water Authority**, the bidding for construction of new infrastructure.
- * **The Minister of Commerce**, sets tariffs in case of monopolies, considering the involved costs.

1 An earlier version of the paper was provided as background to the presentation at The World Bank's *Ninth Annual Irrigation and Drainage Seminar*.

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Water Rights

In Chile, water is a national resource for public use. Private individuals or enterprises are granted the right to use it, in accordance with the Water Law. The right to utilize water in Chile is an actual or real right that confers to its holder, ownership of it. The owner is entitled to use water, obtain benefits from it, and dispose of it. The Chilean Constitution, in the chapter devoted to private property rights, provides that, *the rights of private individuals or enterprises, over water, recognized or established by law, grant their holders the property over them.*

Trade, transfer, transmittal and acquisition or loss of the right to utilize water will be performed within the provisions of Common Law, unless otherwise, amended by the Water Law. Rights of use are consuming or non-consuming; exercising thereof can be permanent or temporary, continuous or discontinuous or alternate among several persons. Consuming rights are those entitling their holder to completely consume the water in any activity. Non-consuming rights are those allowing the holder to use water without consuming it, compelling him to restore it in the manner set forth in the deed granting him the acquisition or right thereof. Water extraction or restitution will always be done in a way that does not adversely affect the rights of third parties over the same water in terms of its quantity, quality, substance, use opportunity and features.

Non-consuming rights of use do not entail any limitation to the unrestricted use provided to consuming rights. Permanent rights are those granted at non-exhausted sources of supply. The other type of rights is temporary rights and they only empower the holder to use water at times during which the main waterway has a surplus volume, after catering to the needs of the permanent rights. Lake or reservoir water is not subject to temporary rights.

Continuous rights are those allowing water to be used 24 hours a day without interruption, while discontinuous rights only allow water to be used during certain periods. Alternate rights are those where use is distributed among two or more persons in successive turns. These rights of use are expressed in volume per unit of time. In the case of permanent rights, water can be used in the corresponding volumetric shares except when the source of supply is insufficient to satisfy them fully, in which case the available volume will be distributed as a percentage of the total available in proportional shares. This applies both to surface water and underground water.

The rights to utilize water may be traded and transferred independently of the land it previously irrigated or the purpose with which the water was utilized. Therefore, there is no appurtenant to land. This is one of the most important features of the new Chilean water policy and explains some of its achievements. These include:

- * The policy fosters farmers' efficiency. Water the user can save can be sold, generating a monetary income that allows investment in technology. Additionally, being free to sell water, farmers have greater flexibility, to shift crops in accordance with market demand.
- * The policy increases the agricultural frontier in its traditional definition, as more land can be irrigated with the same water and, what is by far more important, agricultural production and job generation in rural areas can be increased without the need to construct new infrastructure. As a matter of fact, Chile shifted from a negative agricultural trade balance of -500 million dollars, to a positive one of 1,500 million dollars, without building any new infrastructure in the last 19 years.

The agricultural sector has no unemployment and accounts for 20 percent of the employment in the country.

- * The policy allows cities to buy water, without having to buy land. As a matter of fact, what has happened is that rapidly expanding cities buy rights to many farmers in small proportion of their total rights. No negative effects have been seen in the agricultural zones surrounding water demanding urban areas. Most probably, the high water technology used in the new crops (mostly fruit, wine and vegetables) allows the farmers to produce higher value crops with less water.
- * Last but not least, the legislation allows, but does not oblige owners to trade water independently of land or its utilization.

The rights to utilize water, is established originally by act of authority. The ownership of these rights is acquired by the written declaration in the Property Registration Authority (county authority). When Chile shifted from a highly regulated system, where water rights were state owned, to a private enterprise-market oriented one, the government through transitory laws froze the actual use of water (1975). A 5-year period was established to recognize the preexisting users of state-owned water. Provision was made for a series of proofs of claim, public notices to inform other prospective applicants about the request for water rights and objection procedures, to be followed by those wishing to claim their own right to the same waters. Controversies were settled by the judiciary.

The authority establishes rights of use, by public bidding when:

- * Water is available.
- * Two or more persons are requesting rights over the same water.
- * There are water rights still available in a new reservoir after distributing those previously pledged to other users.
- * There is excess irrigation water drainage (tail water).

Tail Water

Surface drainage from irrigated fields (tail water) flowing naturally into neighboring premises may be used by the recipients thereof without need for a right of use. The quantity of this water will be contingent upon the flow of the main waterway and the distribution or use of water in the source premises. Thus, tail water is neither binding nor permanent. Entitlement to the use of agricultural tail water, does not impose limitations on the holder of the right of use, regarding better utilization of the water.

When agricultural tail water drains into natural or artificial watercourses, the waters naturally are combined. Use by third parties of this water does not entail any lien or easement on the premises of the source. They are acts of mere tolerance that do not confer ownership or create a basis for legal prescription. Rights, liens or easements on spillage and tail water can only be established in favor of third parties by way of a title deed; longstanding benefit is not sufficient to establish them. In order for entitlement to become effective in front of third parties, it must be formalized by notarized deed and registered at the Water Mortgage and Lien Registry of the Property Registration Authority.

Underground Water

Once the existence of underground water has been confirmed, the interested party may apply for the respective right of use. This right will be ruled, in general, by the same legal regulations applicable to the use of surface water. However, the law establishes some special regulations for underground water:

- * The resolution granting the right of use of underground water will establish an area of protection barring the installation of similar works therein.
- * Should the exploitation of underground water by certain users cause detriment to others who are legally entitled to it, the National Water Authority, *at the request of one or more of the affected parties*, may establish a temporary and proportional reduction of the rights of use.
- * This agency may also establish proscribed areas barring any new exploitation therein in order to protect the aquifer. This is established by means of a resolution published in the Official Journal.
- * The National Water Authority may establish restricted areas in hydrological sectors for common use, where there is a serious risk of depletion of a specific aquifer. This will be done *at the request of any user of the respective sector* on the basis of the historic exploitation of their impounding works. This restriction will be imposed proportionally.

Easements and Mortgages

Water-related easements are governed by the provisions of the Common Law unless otherwise amended by the Water Law. Chilean law establishes the following types of easements: natural runoff, aqueduct, overflow and residual water, cattle watering, towpath, research and voluntary easements.

This report addresses only two of the most relevant of these: aqueduct and cattle watering easements.

Aqueduct Easement Aqueduct easement authorizes water to be conveyed through someone else's property at the expense of the interested party. This includes the right to build the necessary channels and waterworks, as well as outlets to allow the water to empty into natural courses.

The owner of the property will be entitled to receive, by way of compensation, the value of all land that is occupied, and any improvements that are affected by the construction of the aqueduct. This will also include a space on either side not less than 50 percent of the width of the channel; with a minimum width of one meter along the entire length of its course, or more as agreed by the parties or as directed by the judge.

The owner is also entitled to receive compensation for any damage caused by the building of the aqueduct or the seepage, spilling and overflow that can be attributed to construction defects or bad management. Should any disagreement arise regarding the amount of compensation due, the judge will decide on the basis of expert reports;

building may start once the sum provisionally established as security for the final compensation due has been paid.

Watering Easement Any town village, hamlet or property lacking the necessary water for its animals to drink, will be entitled to impose a cattle watering easement. This easement consists of the right to take cattle to drink in the impacted property on the established days, hours and locations, along the customary paths and tracks. Nevertheless, the owner of the property may sell the rights of use or modify the direction of the aqueduct.

Mortgage and Liens of Rights to Utilize Water

Rights of use may be mortgaged independently from the property to which their owner has assigned them. This mortgage must be executed by public deed and registered at the Water Mortgage and Lien Registry of the respective Property Registration Authority. Rights will be encumbered with liens in order to guarantee the payment of water fees.

Regulations

Priority

There is no priority in Chilean Law. When no other means are available to satisfy the domestic water needs of a locality, rights of use may be expropriated by reason of public welfare. Payment of the corresponding compensation must be made prior to any expropriation. The expropriated party must also be left with enough water to meet their own domestic requirements.

Rights of Third Parties

Any transfer of the rights of use of natural watercourses will require prior authorization. This authorization will only insure absence of damage from any third party effects covered by the Water Law, affectation of water rights or hydraulic infrastructure. The respective application will be published in the **Official Journal** as prescribed by law.

When hydraulic infrastructures are affected by these transfers, the persons involved must file the relevant motions before the respective user organizations and the Natural Water Authority. In order to obtain authorization, the interested party will assume responsibility, at their cost, of any works or construction that may be necessary to avoid affecting the water rights of third parties, as well as the infrastructure thereof.

The merits of any waterworks will be determined in first instance by the General Water Regulation Agency, and upon appeal, by the Judiciary. Any disagreement arising concerning the compensation due, will be settled by the judge.

Operation and maintenance of the new works will continue to be the responsibility of the entities that operated and maintained the original system (users organizations). If necessary modifications involve an increase in operation and maintenance costs, the interested party will pay the incremental higher cost.

Lapse of Rights of Use

Ownership of rights of use will lapse as per the causes established by ordinary law and in the manner prescribed thereby. These are fundamentally expropriation, loss of sources of origin, sale or barter, acquisitive prescription by third parties and enforcement of mortgages or liens.

Liens on Rights of Use to Ensure Water Fee Payments

Rights of water use will be encumbered with liens as a matter of law, with priority over any pledge, mortgage or other lien established thereon, in order to guarantee the payment of fees owed for the use or acquisition of irrigation works, administration, distribution, maintenance and water distribution expenses.

Individuals who acquire any title to these rights will be jointly liable together with their predecessors for any water fee payments outstanding at the time of acquisition.

Deprivation of Water

User organizations may deprive holders of the use of water in the event of non-payment of the water fees mentioned in the above paragraph, as well as if they extract water in excess of their allotted duty.

Authority Intervention

If serious offenses or misuse are incurred by the directors or managers of any user organization regarding the distribution of water, any of the affected parties may request the intervention of the National Water Authority. If the reported errors, offenses or misuses should continue, this authority may request the court to order the control, by itself, of the distribution of water, for periods not exceeding 90 days, with all the authority of the respective directors or managers. This power will be exercised by individuals determined by the National Water Authority.

The National Water Authority will undertake vigilance of water in natural channels for public use and will prevent the building, modification or destruction of works thereon unless prior authorization has been obtained. The President of the Republic, at the request, or upon the report of the National Water Authority, may declare drought zones during extraordinary dry periods for maximum and non-deferrable six-month periods. The National Water Authority will determine by resolution, the drought periods that are to be considered extraordinary.

Once a drought zone is declared, and if no agreement is reached between the users regarding the distribution of water, the Natural Water Authority is empowered to do so in respect of water available in natural waterways for public use and in channels that impound water from them, in order to minimize the general damage caused by the drought. In this respect, if deemed necessary, the agency may suspend the authority of the users organizations. Any holder of rights who might receive a lesser proportion of water than normally due, in accordance with water availability, will be entitled to compensation from the State. Water accumulated in private dams will not be subject to any drought zone declaration.

In natural waterways or artificial channels where no users organizations have been established, the National Water Authority may, at the request of one of the parties, take charge of water distribution in declared drought zones.

Infrastructure

All major infrastructure construction (dams of more than 50,000 cubic meters or aqueducts for carrying a flow of more than 2 cubic meters per second) need authorization of the National Water Authority in order to prevent third party effects and environmental impacts.

State funded infrastructure construction require:

- * Active participation of potential users in the respective project.
- * Commitment of 33 percent of potential users to acquire the infrastructure to design the project.
- * In order to actually build the project, the commitment goes up to 50 percent of potential users to acquire the infrastructure.
- * The constructed infrastructure has to be transferred to users organizations.

The President of the Republic may, by a founded decree, order the study of a State-funded water infrastructure project and the execution of the respective works, even if they do not meet the preceding requisites established by law, if reasons of public welfare so advise. The excess over the market value, will be incumbent upon the State. Notwithstanding the provisions of the law regarding the compulsory transfer of State-built water infrastructure to the users thereof, the President of the Republic may direct that, for reasons of public welfare, the State is to keep those works under State ownership and continue their administration or exploitation.

The beneficiaries of the mentioned works are required to pay annual dues for the use thereof and for exploitation expenses.

Users Organizations

Chilean legislation establishes that if two or more persons hold the right to use water from the same source (river, dam, channel, underground water, etc.) this creates a *de facto* association between them which they may regulate as such by establishing an Association of Canal Users (*Asociación de Canalistas*).

The same is applicable in the case of natural waterways, where users must organize as a Control Committee (*Junta de Vigilancia*). If due to the use of available waters, or the construction of irrigation infrastructure, new rights of use are established, the holder thereof will be compulsory incorporated into the respective user organization.

The most important functions of these organizations are:

- * Drawing water from the main waterway.
- * Building, exploiting, preserving and improving water infrastructure necessary to their members.

- * Administration of water infrastructure, from state constructed dams (transferred to them) to small aqueducts.
- * Distribution of water.
- * Collecting fees for administration, distribution, maintenance and amortization of constructed or acquired infrastructure.
- * Withholding water supplies from those who do not pay the above mentioned fees or extract water in excess.
- * Solving conflicts among members, according to the law.

Urban Public Utility Companies

The formerly government-owned urban water and sewage city services have been transformed into Urban Water and Sewage Companies, ruled by the common laws of commerce. Shares are owned by the public, the municipalities, the regional governments and the national Government, in different proportions. Shares are traded in the stock markets. The Government is presently involved a program of transferring its shares to the public through competitive bidding, and expects to completely privatize ownership of them by December 1993.

The companies have concessions to supply water and sewage services to a specific city, or sectors within a city, for the larger cities. They have the right to utilize water they own which were transferred to them, and those they have bought in the private market. They are obliged to supply services to new potential users. The water company may minimize the obligation to acquire new raw water rights, by soliciting in the market, that own rights. These individuals transfer their rights at the same price, to them. This, in practice, rarely happens as the company is normally the one who buys the water rights directly.

Since these concessions create a natural monopoly, the fees for urban water and sewage services are fixed, by the authority, on a 5-year basis. These fees take into account the market price of raw water, amortization of infrastructure, preservation, maintenance, management costs, distribution, collection and a certain percentage for investments in infrastructure improvement.

The Government subsidizes the tariff of urban water to low income sectors of the population. This subsidy amounts to a certain, monthly, free quantity of water, in predetermined sectors of the cities. The subsidy is paid directly to the water company.

Achievements

The market allocation of water has not only proven to be efficient in assigning water to its best economic use but, in the process, has correctly priced water with subsequent benefits, mostly in terms of efficiency. As indicated earlier, the water policies applied in Chile—mostly because of adequate pricing and unlinked transferability of water and land—have fostered efficiency in agricultural use of water. This has allowed the country to increase its productivity, thus, generating more production with the same, or even less water.

Because of transfers to urban users, it is interesting to point out that the expansion of agricultural output has been mostly generated by shifting, on irrigated areas, from grain, oilseeds and cattle to fruit production. There has been no need to construct major hydraulic infrastructure. Only one major project has been recently approved; an aqueduct that diverts water from one river to another. (*Canal Laja Diguillin*). The new rights to use water shares are already established with user owners of the 60,000 hectares it will irrigate. Crops are mostly for export (asparagus, raspberries, blueberries, pears and apples) and sugar production.

Efficiency in urban water and sewage services has been greatly increased, without a negative impact on prices. What differs from the previous situation is that state owned public water services had a fixed national water fee for all cities. Now the tariffs of each company depends on its costs. Most of the differences in costs can be attributed to the differences in the price of raw water and transportation costs (especially in the northern dessert region). The coverage of potable water has raised to 99 percent in urban areas and 94 percent in rural areas. Rural areas include towns of less than 5,000 people. The reality of having an actual right over the use of water, and an active water market, has fostered the construction and operation of treatment plants, who sell water for agricultural or urban uses.

There is evidence that secure water rights, and the attributes of users organizations, have diminished the number of conflicts requiring a court settlement. Previously, court cases over water were extremely important, taking in consideration that definite resolution of the case could take several years. However, disputes do continue to arise.

Perhaps the most important achievement of the Chilean water policy, is its social impact, through redistribution of wealth and eradication of poverty. In the past, the construction of, most of the times, nonprofitable hydraulic infrastructure, the distorted water prices and the deficits caused by inefficiencies in state owned water services, were financed through tax resources. That meant transferring resources from the poorest sectors of the population (that had no water) to the wealthiest (those that had water).

Through private financing of infrastructure and correct pricing, the new policy has freed tax resources. These can now be used in state priority functions, having a redistributing role as the infrastructure is used in helping those in need and eradicating poverty. As to domestic water users, the policy subsidizes the poorest through direct, transparent, focused and efficient mechanisms.

It is important to mention that Chile had a unique opportunity to dramatically shift its water policies that, perhaps, not all others countries have. The fact that all water rights were expropriated in 1966, and transferred to the State, made it possible to clearly define the characteristics of the new water rights in 1975. The definition of sure, tradeable and transferrable and not linked to land water rights, was basic for developing the new water policy. This accounts for much of the law's positive achievements.