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Water rights

markets: institutional

elements

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Water Rights
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Water is a scarce resource which has an economic value and fulfills important ecological and social functions. For this reason, it is normally considered a public good of the State, which grants user rights to private individuals. These rights are usually protected by constitutional provisions regarding private property, since it is assumed that the private sector will not make investments unless it has guaranteed ownership rights. On the other hand, the water in respect of which user rights are granted must indeed be used for socially beneficial purposes: otherwise the rights are revoked. There are some systems where the user rights are unconditional, but this is not usual. The legal elements affecting the stability of water rights are of a structural nature: they include rules ensuring stability, those concerning the transfer of such rights, and rules on the recognition of prior uses and rights. These latter rules are of fundamental importance, since they recognize established economies and ensure social stability. Since water has an economic value, its transfer is an important aspect for ensuring its optimal economic use; professionals in the water management sector must be open to the idea of the transfer of rights. As such transfers have an impact on third parties, on social stability and on the environment, countries with mature systems of transfer suitably regulate such impacts. The regulations are also designed to protect the means of subsistence of the most under-privileged sectors of the population, including aboriginal groups. This is in keeping with the economic, ecological and social progress pursued in our days.

I

Introduction

Fresh water is a scarce natural resource which, because of various phenomena, is becoming increasingly valuable in economic terms and ever more essential for social services and needs.

Its proper management and conservation call for suitable legal instruments which, on the one hand, will ensure private investment in developing the economic potential of this resource, and on the other will permit its adequate control in the light of environmental and social objectives.

The institutional and legal frameworks of the various countries determine the ways in which the private sector will be motivated to invest in the development of water resources. In this respect, the legislation plays a structural role of economic and social engineering, since it shapes the way in which the economic agents relate to the productive resources. This function of the legislation is highly important, because it impels the economic operators to carry out certain types of tasks and influences the way they effect them (if these activities are economically beneficial to them, the operators will carry them out of their own free will, without any need for public coercion). This set of rules determine the stability and flexibility of the water use rights of the economic agents. They are termed *ground rules* because they determine the basic matrix of rights over the resource.

At the same time, because of the physical, chemical and biological features of water—it is a resource which is constantly flowing and has a great potential for generating negative externalities or serving as the agent for their transmission, it has a crucial ecological role, and it can serve multiple uses if suitably planned—water legislation includes a number of *regulations*¹ over the way private individuals use their water rights, in order to ensure that the forms of use do not lead to the wastage or deterioration of the resource,

do not encourage speculation or monopolies, and do not cause irreversible rigidities in its allocation.

The challenge—and virtue—of water legislation is to strike a proper balance between the ground rules and the regulations. The former seek to maintain the stability and flexibility of water rights in order to ensure, or at least promote, the greatest economic benefit from their application. The latter seek to ensure efficient and orderly use of water resources, to preserve their production capacity, ecological role and quality, and to prevent the formation of monopolies and speculation. The ground rules must not end up permitting monopolies or environmental degradation, while the regulations must not stifle the economic system.

The present study seeks to identify the various ways in which the legislation of different countries in the world has tackled these aspects. To this end, an analysis is made of various topics such as water rights systems, protective measures, water rights markets, information systems, the expiry of rights, information management systems, the organization of water management, etc.

Normally, water rights systems are not bodies of laws which reflect absolute ideological positions. The need to cope with concrete problems has led legislators to adopt the measures called for by the concrete situation, the general good and public ethics. Thus, for example, all the systems—except for a few isolated cases which are in the process of being changed—recognize private water use rights but make them subject to certain conditions (payment of fees, use in accordance with permits granted, restrictions in the light of environmental and social aspects, etc.). Some systems authorize the trading of water rights, but all of them demand that the water in question should be used in an effective and beneficial manner, in order to avoid monopolies and speculation: indeed, it is often required that transfers should be authorized by administrative or legal authorities, be duly publicized, be officially registered, and possibly be subject to conditions which did not affect the original holder of the rights. The right to transfer has no legal value unless it is associated with the effective and beneficial use of the resource.

¹ These terms, and the substantive and functional differences which the various rules imply, have been accepted in various documents published by international agencies, including those of the seminar on water legislation organized by the World Bank and ECLAC in September 1994 (World Bank/ECLAC, 1994; United Nations, Economic and Social Council, 1993 and 1994).

II

Structural elements in water legislation

As already noted, the structural aspects of water legislation deal with the stability of water and land rights assigned to private citizens, recognition of consuetudinary rights and uses, and the transferability of water rights.

1. Stability of water rights

In most countries' legislation, with few exceptions, water belongs to the State public domain. There is a growing tendency to consider that water forms part of the stock of national wealth and that a declaration that it forms part of that stock takes the place of and is equivalent to a declaration that it forms part of the public domain, so that it is no longer necessary to mention this specifically.

This concept, which seems to equate public domain with national wealth, is mistaken. National wealth is an accounting term which can at most be considered a generic term whose accepted meaning is different from that of public domain. If it is believed that the two terms are synonymous, it would be better to use the accepted term "public domain". Otherwise—without wishing to do so or without understanding their actions in this way—legislators could be taking water resources out of the public domain. This terminology has been used in draft water legislation in Peru. In France, where the term "national wealth" has been used with reference to water, this obviously does not convert private water rights into public domain water. In the

opinion of the author of the present article, it would be advisable to continue using the accepted terminology unless drafters of Bills, Congress, the Executive and the entire population of the country concerned have it perfectly clear in their minds that they do not want water resources and their various forms—such as the river Marañón, the Amazon, the Bío-Bío or Lake Titicaca—to come under the public domain.²

However, in the great majority of systems, the water use rights granted to private individuals enjoy the fullest protection of the constitutional provisions on property, provided they comply with the objectives and conditions under which they were granted and recognized.

Stable and dependable water rights systems tend to increase the productivity of the resource, because users know that their investments in water conservation and development will mean future gains for them. This is why prior uses are generally recognized when changes are made in the legislation. This is a traditional principle in water law, going all the way back to Roman law on the matter,³ and is designed to avoid disturbances in the economy and in existing uses (United States, Supreme Court, 1984; Argentina, Corte Suprema de Justicia, 1987).

Respect for uses and rights which existed prior to changes in the legislation is a necessary requisite for social stability. Failure to observe this principle gives rise to instability, and possibly tension, in society (Conac, 1989; Perrit, 1989).

² This is the terminology used in, among others, the Argentine legislation (art. 2340 CC); the Chilean laws, which refer to national goods (belonging to the nation as a whole) for public use (art. 589 of the Civil Code and art. 5 of the Water Code); the Ecuadorian legislation (art. 2 of Water Law No. 369), and the Spanish laws (art. 2 of Water Law 29/1985). It is also the terminology used by the American States (United Nations, 1972, p. 16). This terminology has a precise meaning which is universally understood in line with legal science. As the public domain is expressly defined, when the link between water and the public domain is eliminated it could be argued that this means that the resource has been removed from that domain. At

least two other authors appear to concur with this appreciation: Gazzaniga (1993, p. 6), in his comments on the 1992 French water law, and García Montúfar (1995), with reference to the draft water legislation for Peru.

³ According to *Lex Coloniae Genetivae Iuliae* (43 A. D., period of the Republic), water resources connected with public land opened up to settlers are subject to the same uses and charges as under their former owners. With regard to the period of the Republic, see Costa's explanations in *Le Acque nel Diritto Romano*, cited by Caponera, 1992, pp. 30 and 50.

Stability of rights is an element which promotes investment in the economy and conservation of the resource in question. Without legal stability, there is no incentive for long-term investment and conservation (Cyriacy-Wantrup, 1951; Cohen, 1967; Commons, 1950; Lee Gray and Nobe, 1975).

2. Consuetudinary rights and uses

The question of prior rights and uses is of great importance in the case of indigenous peoples, especially when those rights and uses are based on consuetudinary rules or agreements or laws of the countries where those peoples dwell.

Special consideration and protection have been given to the rights of such peoples in the United States and Canada. Thus, for example, Canadian judges have ruled that treaties and laws must be interpreted in favour of indigenous people in an equitable, broad and liberal manner. The United States Supreme Court has adopted a similar interpretation, holding that it would not be reasonable to believe that Congress deprived the indigenous peoples of the means for continuing with their traditional way of life, yet did not give them any possibility of changing

to new habits and customs (United States Supreme Court, 1908; Barlett, 1987).

The South American countries have not yet made a detailed analysis of the question of the water rights and uses of their indigenous populations. Recent legislative proposals, events and legal decisions in the region, however, would appear to indicate that the interests of the indigenous population have not been given the same priority in government decisions and actions as their opposite numbers in the United States and Canada (see the draft Peruvian water law; Latin American Weekly Report, 1994; Enríquez Vázquez and Real López, 1992).

3. Transfer of water rights

Because of the relative shortage of water, considerable changes have taken place in the forms of transfer of water rights as demand for this resource has increased. The acceptance of such transferability as a basic principle is important for making water use more flexible, dynamic and efficient. At the same time, it is necessary to make a more detailed analysis –so far lacking in the region– of the main factors and conditions of water rights markets in systems with experience in this field.

III

Regulatory elements in water legislation

The most important regulatory elements in water legislation are those designed to protect the quality and quantity of the natural resource base and to avoid the transfer of negative externalities among users of this resource. These regulatory elements include the following:

i) Public control of the resource through the police power of the State or, in its representation, of the public sector. This control takes the form of the requirement for permits for water use and dumping or discharges into bodies of water.

ii) The assignment of water rights on condition that effective and beneficial use is made of the resource, including in some cases rules on its re-use. Failure to fulfil this condition usually leads to revocation of the right.

iii) Definition by law of what is meant by beneficial use, including in some cases the demand that

minimum flows must be maintained in line with ecological requirements.

iv) The establishment of systems of preferences and priorities among the various possible uses of the resource.

v) Public control of water quality, including rules on the absolute, joint and several civil responsibility for damage to the environment, standards on the discharge of effluents and the quality of the recipient bodies of water, control of the use of products which affect water quality, technical requirements, and regulation of the use of soil and spatial areas.

vi) Public control of water use in order to ensure that it complies with the water rights granted. This control includes the execution of follow-up and monitoring activities: rights of entry and inspection; extraction of samples; the right to demand information and records; faculties for granting approval for

the execution of works of a certain size; the right to demand that water use practices should be of an acceptable nature; suspension of water rights in the event of unacceptable or unauthorized practices; and revocation of rights in cases of infringement of the rules or non-use of the resource.

vii) Protection of water sources, supply points and watercourses; protection and management of river basins; prevention of deforestation; preservation

of catchment areas; integrated planning of water use, and joint use of surface and ground water.

viii) Right to reassign the resource in cases of emergency.

ix) Fixing and collection of financial fees and charges for water use.

x) Expeditions procedures for the settlement of disputes and special rules for coping with emergency situations.

IV

Conditions for water use

Some basic aspects of modern water legislation are described below, as taken from a selective sample of laws adopted during the last ten years.

1. General aspects

The German water law, as amended on 23 September 1986, lays down a number of conditions for water use and for the granting of permits and licences in that connection. Thus, the law requires the effective use of water rights, the prevention of harmful effects, payment of compensation, prior preventive evaluation of the effects of certain water uses, designation of supervisors, adoption of measures to correct harmful impacts, and payment of the common costs of overall control (article 4). The German legislation allows for the imposition of *ex post* conditions subsequent to the granting of a permit or establishment of a condition. Such *ex post* conditions may be the result of economic or ecological factors necessary for proper water management (article 5). The system of water use control is extremely strict: water rights may be revoked if they are not used, if they are not necessary, if there is an unauthorized change in water use, or if more water than the allocation specified in the permit is used. Permits are required both for water use and for the discharge of effluents into bodies of water; applications may be rejected, and permits and licences are always granted for specific purposes. The granting of a permit does not mean that the State undertakes to ensure that the permit-holder will always enjoy water supplies of a given quality or quantity. Water use by owners or riparian dwellers must not adversely affect third parties, the

water itself, water flows or the water balance (articles 15 and 24).

In Europe and Asia, permits are now required for water use, and the validity of the rights granted depends on the effective use of the water in question, the payment of fees and charges, and the absence of any damage to the environment. Such permits are often subject to changes and new conditions, as required by current circumstances and ecological needs. In the latter respect, it is worth noting that the recent French water law (1992) allows for the introduction of changes in water rights without compensation when required by public health or safety, when the water environment is under major threats, and in cases of neglect or faulty maintenance of works or installations (article 10(iv)). Other laws worth mentioning in this respect are the Chinese law of 1988, the 1991 British law on water resources, and the 1985 Spanish water law. This latter legislation makes water rights subject to effective and beneficial use, on pain of cancellation (article 64) and it also allows for the modification of rights after they have been granted, "for supervening reasons" (article 63). The new Mexican water law also includes a clause requiring effective water use, on pain of cancellation (Téllez, 1993, pp. 110-111).

2. Effective and beneficial use

Among the most important provisions in water legislation is the requirement that effective and beneficial use should be made of water. As water is a scarce resource, there is no reason whatever to allow a private individual to acquire water rights and not use

them, since this would open up the possibility of speculation and possible enrichment through the mere passage of time, at the expense of a scarce public good which is in ecological, social and economic demand. Not requiring the beneficial and effective use of the resource would mean favouring monopolies and management of the resource as a means of unfair economic competition: blocking access to the resource means blocking the entry of new competitors and impeding expansion of the supply of goods and services.

This latter point is particularly true in the case of mining in arid regions and power generation. This is why the United States legislation on arid regions, which originated precisely in the needs of the mining sector (prior appropriation), places fundamental emphasis on the effective and beneficial use of this resource. Without use there can be no rights. The use must be clearly identified and must not contravene the public interests involved in water use. This is considered so essential that in the event of changes in the legislation (a matter which will be dealt with below), the only uses which are recognized and protected are those which have effectively been carried out. Uses must be efficient and reasonable. Avoiding monopolies and speculation is a fundamental concern. The authorities have the constant and ongoing faculty to demand greater efficiency in use of the resource, in order to ensure the fullest possible use of natural resources. This system is applied in Colorado, Kansas, North Dakota, South Dakota, Arizona, Montana and other states. In South Dakota, the law provides that optimal use of the state's water is a matter of public importance. Water uses must not lead to speculation or waste, and they must be socially accepted and reasonable. The methods used must be efficient. It is not desired to give anyone an absolute monopoly over the resource by giving them more rights than they need for effective and beneficial use: in short, water is not a suitable element for speculation, especially in view of the fact that the allocation of water rights is the result of a public act.

For reasons of limited space, we will not enlarge further on this subject, but it is recommended that a profound analysis of the matter should be made before adopting water legislation which does not demand the effective and socially beneficial use of the resource. It is suggested that a close look should be taken at the United States legislation, which has stated this principle most clearly, especially as re-

gards mining, energy and the irrigation needs of the most arid areas of the country (Beck and Goplerud, 1991, p. 105 *et seq.*).

The requirement for effective and beneficial use of the resource is so important that in the United States legislation, too, it has been an accepted criterion for recognizing and legally protecting prior uses in the event of changes in the legislation. In many states of that country, the status of riparian dweller was used as a criterion for allocating water use rights. This system, however, which does not ensure the best use of water in the economic sense, has tended to be gradually replaced by the system of permits. When this happened, many riparian dwellers complained that their property rights were being affected, because on account of the changes in the law a resource which had previously belonged to them as part of their land ownership rights could now only be obtained through administrative permits. United States courts and judges repeatedly found that the changes in the law affecting water rights represented a legitimate use of the State's police powers and a legitimate form of regulation of the public domain, and the only limitation that must be applied in order not to infringe the constitutional right to own property was the need to respect established rights, but only in so far as there was effective use of the resource. Some states (such as Kansas, Oregon and Washington) laid down time limits for the effective use of water, after which unused rights would be cancelled without the right to appeal, in the absence of such effective use (Beck and Goplerud, 1991, vol. 1, p. 366 *et seq.*).

All the foregoing is extremely useful for the Latin American countries, whose legislation currently permits the existence of water rights without demanding their effective use. When shortage of water resources makes it necessary to use them more effectively and changes are considered in the legislation, these countries would do well to bear in mind what was said above about the United States legislation.

In the case of countries which are in the process of implementing new legislation on the matter, it is suggested that under no circumstances should they grant water rights without the requirement that they should be used in an effective and beneficial manner within a given time limit. The comparative legislation offers any number of examples of the problems generated by omission of this requirement and the opportunities provided for the speculative manipulation of such a fundamental resource as water.

The Chilean water law does not currently demand the effective and beneficial use of water. In this respect, it is interesting to cite some examples of the application of this law in the context of the large-scale privatization of water-related public services – a process in which great institutional actors come to play leading roles in water use, so that this resource becomes a basic element in the strategies whereby the services enterprises seek to dominate the market:

As noted by Bitrán and Sáez (1994, p. 50 *et seq.*), the regulatory system is based on the idea of competition in energy generation, but in practice this competition does not exist in Chile, since ENDESA has approximately 65% of the generating capacity, while CHILGENER has 14%. The water rights belong fundamentally to ENDESA, which has an incentive to evaluate projects in the light of the profitability of its intra-marginal capacity and obtains a long-term monopolistic equilibrium by putting off investments. No new entrepreneurs can enter the market, because they do not possess water rights to tackle the most efficient projects. Water rights should not be privatized along with the companies, but should be returned to the State for re-allocation subject to the condition of effective use within a given time limit.

Thus, the Chilean experience appears to confirm the reasons why other countries make the principle of effective and beneficial use a fundamental element in their water rights legislation.

Monopolization by way of the creation of entry barriers through control over essential production inputs and natural resources is a classical element in the economic literature (Sullivan, 1977, pp. 25, 31

and 77). The existence of water rights markets does not necessarily solve the problem, since crucial production inputs are often not placed on the competitive market (Armstrong, Cowan and Vickers, 1994, p. 117 and footnote on page 22).

In view of the foregoing, it would appear that the lack of requirements for effective and beneficial use of the resource, on the one hand, and of mechanisms to counter the cornering of a resource, on the other, have a negative effect on water markets and hence on the efficient allocation of this resource. It is therefore asserted that, with few exceptions, the empirical evidence shows that in Chile the water markets have not operated at their full potential. Bauer, in a seminal work on this subject, notes that the absence of criteria based on the public interest in the Chilean legislation has been seen by some as an element that favours monopolies and speculation, and that the Government virtually guarantees the under-valuation of water rights by not imposing any obligations in the interest of the public good (Bauer, 1995, pp. 2, 57 and 171).

Moreover, in the absence of any institutional mechanism providing for the expiry of rights or the obligation to put them on the market, the incentives for the big institutional users to sell such rights are less than the strategic advantages offered by controlling an essential production input in the context of corporate policies aimed at market control. For this reason, in the public discussion of the future energy policy of California in a market framework, emphasis is placed on the need to prevent monopolization of generation sources.⁴

V

Quality controls and environmental protection measures

1. General

For the same reasons underlying the efforts to ensure effective and beneficial use of water resources, measures have to be taken to protect the environment. These measures are applied through laws of general and binding effect, combined with systems of punishments and objective, absolute, joint and

⁴ See California: R.94-04-031, I.94-04-032 COM/DWF DRAFT (WP6.1) p. -xxxvi and also paragraph 68 of the "Findings of Fact" of the same document, in which it is concluded that the concentration of generating units is a matter of serious concern to the Government. See "Draft Policy Decision COM/DWF", R.94-04-031, I.94-04-032 COM/IJK/JLN, p. 32, whereby rights holders possessing a concentration of generating units would be obliged to transfer them.

several responsibility for damage to the environment. In some cases, this responsibility may be retroactive and may include not only those directly responsible for the damage but also their investors, financiers, and, in the case of subsidiaries, the enterprise controlling the holding company of which the firm causing the damage forms part.

In some cases, responsibility for pollution may extend to public officials and employees of the legal entity guilty of pollution. Punishments may also be applied which consist of cumulative daily fines for every day an offence is committed; systems are set up providing for the rights of inspection, taking of samples, and demands for information; quality patterns are established for effluents, treatment processes and recipient bodies; permits are required for the discharge of effluents and special rules are established for the control of toxic pollutants; financial charges are made for contamination, and the systems of quality and quantity control are unified in a single body, organized in the case of the European countries at the river basin level.

The systems are governed by some key principles which include: i) the principle of prevention (control of pollution at its source); ii) the principle of taking advance precautions (once the possibility of serious pollution has been established, control measures are required even if there is no definitive proof of the cause); and iii) the principle that "the polluter must pay".

2. Some examples of legal doctrines established in order to protect the environment

In Germany, the 1986 law imposes the general duty to avoid pollution of water or detrimental changes in its properties and requires economy in its use in order to conserve natural water resources (article 1a). It also requires that discharges into bodies of water must not contain more than a certain content of pollutants and must be regulated in accordance with technological treatment standards. It demands the use of the best available technology for controlling toxic pollutants (article 7). Control programmes will be under the direction of the *Länder* (states or provinces). Responsibility for damage due to pollution is absolute, objective, joint and several (article 22). The law also stipulates the maintenance of suitable flow conditions, the maintenance of suitable conditions for navigation, attention to ecological needs, and protec-

tion of morphological characteristics, river banks, and the self-cleansing capacity of rivers.

There is also a supplementary law, of 6 November 1990, on charges for the discharge of effluents. These charges take account of the levels of danger of effluents, their toxicity for fish, the quality patterns established for the recipient body, and downstream pollution units. The charges for pollution must be paid by any person who discharges wastes into any body of water in the country.

The Netherlands also applies a pollution control policy aimed primarily at making the country a safe place to live in by developing and maintaining healthy water systems which guarantee the sustainable use and development of the resource.

Three main principles have been established for controlling water pollution: reduction of pollution at the source; suitable hydraulic design, and properly guided and rational use of water resources. The control system includes the control not only of specific points of pollution but also of general potential pollution, in the latter case through the control of certain products and the use made of space. The costs of pollution control are paid for from the general budget (the taxpayers) and also from specific contributions by polluters.

3. Public trust

Before concluding this brief analysis of the main points, mention should be made of the doctrine of public trust developed by the United States courts.⁵

In 1869 the Illinois legislature granted the railroad company rights over the bed of Lake Michigan. Four years later, however, the legislature revoked the law on which the granting of rights over the bed of the lake had been based. The railroad company argued that this revocation adversely affected its property rights stemming from the previous law. The United States Supreme Court found that the first-named law was invalid because it violated the principle of public trust whereby the state of Illinois had rights of ownership over the bed of the lake. Such trust cannot be renounced by the State through the transfer of ownership.

⁵ See *Illinois Central Railroad Co. vs. Illinois*, 146 US 387, 1982.

This case is very interesting because the same principle could be applied when the functional manner of granting water rights is equivalent to the transfer of title and of public domain over the resource. An example of the possible application of this principle is the granting of water rights without any time limit and without any obligation to make effective use of them. This would be a violation of the principle of public trust, since in functional terms the State divests itself of its duty and faculty to control the proper use of a good in the public domain, by granting perpetual rights which are not subject to any conditions as regards the use made of them. If one of these two elements is not present (obligation to make effective and beneficial use of the resource, or limited duration of the right), then the legislation would be invalid, since it would violate the principle of public trust.

This principle has also been applied for environmental motives. In the United States legislation, the national environmental protection law takes the concept of the environment in its broad sense, so that it can include not only the natural environment but also social elements (Roger and Farber, 1992, pp. 28-29).

The principle of public trust has also been applied to limit the diversion of water flows covered by water rights when such diversion would result in the drying-up of a natural lake. This has been considered a notable aspect in view of the near-sacred status given to water rights in the Western states (Sullivan, 1977, p. 295 *et seq.*). Here, again, this application of the principle could be useful in connection with the handling of water rights which have already been granted, when the use of such rights has an adverse environmental impact.

VI

Water rights markets

1. General

The trading of water rights is seen as a good alternative for optimizing the use of scarce resources. It also provides a way of putting off costly civil engineering works through the reallocation of the existing available water to more profitable uses, at a price.

Water rights markets are a distinctive feature of the legal system of the Western United States. In California, Nevada and Utah, water rights can be transferred separately from land rights. In other states, such as Arizona, water rights can only be transferred as an ancillary element to land rights. With the sole exception of water quality problems, the reallocation of water rights is the most important political issue in the arid Western United States (Beck and Goplerud, 1991, vol. 2, p. 234).

The United States system for the transfer of water rights displays fundamental differences from the system adopted in the Chilean legislation or in the code currently being proposed for Peru, which is inspired by the Chilean system. In the United States system, as already noted, it is considered inconceivable that valid water rights could be divorced from the effective and beneficial use of the water in ques-

tion: water which is not being used cannot be transferred, because it is not covered by any right. In the United States legislation, effective and beneficial use is the source, cause, means, *raison d'être* and fundamental condition of water rights. Rights which are not effectively used cannot be transferred, because they simply do not exist. This principle seeks to avoid the speculative enrichment of persons or firms through the sole fact of acting as intermediaries in the marketing of a good which is part of the public domain of a State or nation. Aspects relating to the prevention of monopolies have already been mentioned earlier.

2. Requisites of water rights markets

According to Anderson, the highly respected United States expert on this matter, if a reallocation of water rights is to be justified, it must comply with the following fundamental requisites: i) the water must have been used effectively and beneficially before the transfer, and must continue to be used in the same manner after it; ii) the reallocation must not adversely affect other users, and it must be in the public interest, as certified administratively or judicially in

accordance with the system applied in the state in question.

Transfers beyond the area of origin (river basin) are not always authorized. Moreover, not all states permit transfers of water rights.⁶

3. Arguments in favour of the regulation of water rights markets

The question of water rights markets is by no means free of controversy. While a considerable number of highly reputed experts advocate their establishment, other equally reputed experts express some reservations on the matter, especially because of their concern over the possible effects of concentration of rights, since it is usually the richest and most powerful users who buy the rights of the less economically favoured users. Although this satisfies the objectives of economic optimization, the social and ecological effects of such processes of concentration are a source of concern. This is very clear in the Western United States, where conflicts have arisen over transfers of water rights from farmers to the big cities. The interests at stake are the growth of the cities, on the one hand, and the culture, lifestyle, environment and future of agriculture-oriented rural communities on the other. Thus, it has been asserted that the current system of water rights markets in that country is incapable of settling conflicts over water rights transfers in an equitable manner (Ingram, 1989, p. 10).

Water rights markets are very complex, so that the transfer processes are affected by various factors, including: the priority of the rights traded; the characteristics and profiles of the buyer and seller; the geographical flexibility regarding the use of the rights transferred; the economic importance of the operation; the reliability of the rights involved; the volumes of water transferred; the overall water management system, and the economy of the area where the operation is being carried out (Colby, Crandall and Bush, 1993, pp. 1565 to 1572).

Because of the complex elements involved, a considerable number of experts demand that water rights markets, where they exist, should be suitably regulated. Thus, Babbitt says that the absence of control and regulation of water markets results in econ-

omic Darwinism: it is the biggest and most powerful actors that survive.⁷

These cautious positions are reasonable and understandable, since economic laws are rarely absolute (a Californian judge said that in the view of the court the idea of rational maximization of utility was an economic construct which has no counterpart in the real world, so that it was not a suitable basis for arriving at a decision on the case before the court).⁸ It is perfectly true, however, that cases can also be cited where the rigidity of the water allocation system (together with other institutional, macroeconomic and social factors) has led to inefficient resource allocation, to levels of production which exceed effective demand, to unnecessary investments in infrastructure, and in some cases to widespread breakdowns in certain Latin American regional economies.

4. Regulation of water markets in United States law

Mature water rights transfer systems accept the possibility of such transfer under specific conditions, and subject to administrative and public control.

Among the United States controls over transfers, mention may be made of the laws of some states (appurtenancy statutes) which prohibit the transfer of water rights in order to obviate land speculation; the requirement that transfers should be approved by administrative or legal bodies, which give their permission only under certain conditions; the requirement that transfer applications must be publicized before their approval, so that they can be opposed if necessary by public or private interests; the requirement that no damage must be caused to the interests of third parties; the requirement that all transfers must be officially registered; the obligation to relieve adverse effects on the environment; compulsory evaluation of the environmental impact of all proposed transfers; the possible imposition of conditions which did not apply to the original water rights, and the obligation to provide proof that effective and beneficial use was made of the resource before authorization of the transfer of formal water use rights to the new purchaser. If the application is not approved,

⁶ For a more detailed description of this matter, including the complex and detailed United States regulations governing this question, see Anderson and Simmons, 1991, pp. 233 to 399.

⁷ See quotation from Babbitt in Ingram, 1989.

⁸ See the case "Natural Resources Defense Council vs. Duvall", 777F, Supp. 1533 (E.D. Cal. 1991).

then the rights are cancelled and may even give rise to penalties. In the case of irrigation districts, approval must include the authorization of the district in question, when the resource is transferred outside it, and in the case of indigenous water rights, federal government approval is required (Blumm, 1991, p. 119 *et seq.*).

Transfers must be in the public interest and are subject to review in the light, *inter alia*, of their effects on the economy, hunting, fishing and public health; the loss of alternative uses; damage to the interests of third parties; loss of public access to public bodies of water; and the qualifications of the buyer. An important element is the protection of local public interests and those of the area of origin of the resource. Finally, it may be noted that in order to obviate damage to the interests of third parties and the sources of supply, transfers must be limited in principle to the volumes consumed in the past and not expressed in terms of nominal allocations.

The foregoing reflects the present situation as regards water rights markets in the United States, which is the country with the greatest experience in this respect.

6. Water rights transfers in South America

This issue is still at an incipient stage in South America. In some countries, there has been large-scale development of irrigation systems with absolute prohibition of the transfer of water rights, but an adjustment would now appear to be called for, since demand has increased and diversified.

In other countries, such as Chile, the transfer of rights is permitted. The proposed water law for Peru also provides for transfers. These two models, however, do not incorporate the meticulous and detailed considerations of a public, social and environmental nature which were described earlier in connection with the United States legislation. This fact, together with the absence of any requirement for the effective and beneficial use of the resource, could result in monopolies, concentration of water rights in a few hands, restrictions on competition through the accumulation of rights for oligopolistic purposes, and also adverse social and environmental effects, if it

is the poorer sectors which transfer their rights to those with greater economic power. This could happen because only the market elements of the system of prior appropriation applied in the Western United States were adopted and the elements of public interest which are so important in such a system were left out.

With regard to the Chilean experience, it has been said that few transfers have actually been made, because of the limitations associated with the institutional system, the nature of the water rights deeds, and the physical basis for regulation of the resource, and also because of the transaction costs involved, the lack of legal knowledge, and the resistance on cultural grounds. The Chilean Water Code has also been criticised as suffering from a critical fault in its economic logic: the fact that water rights are free (Bauer, 1993, pp. 1 - 4). Supporters of the system, however, claim that this is irrelevant because it only concerns the initial distribution of the rents and not the economic efficiency of the allocation through a market system (in other words, all that matters is that the rights can be freely transferred).

It has also been said that the Chilean Water Code is a failure in its economic aspects, and that the elements which have really helped to raise agricultural yields are the irrigation subsidies (Law No. 18450) and the marketing system. As regards the equitability of the system in Chile, Bauer argues that its effects may have been negative, since small users did not have the information or resources to benefit from it. The same author criticises the limited operativeness of the markets, claiming that the institutional system created conditions which gave little incentive for water rights transactions. He also claims that the system may have helped to cause small users to lose their rights (Bauer, 1993, p. 3). The question of equity is currently a matter of concern for agencies such as the World Bank and its consultants (Simpson, 1994, pp. 30 - 33), who wonder how the system would operate in conditions of subsistence agriculture and consider that unsuitable distribution of access to substantial proportions of production resources contributes to environmental degradation (World Bank, 1990, pp. 42 - 44).

VII

Conclusions and recommendations on legal policy

In most countries of the world, there is serious concern to ensure integrated management of their water resources, their conservation, and the prevention of monopolies based on them. In South America, however, there is a tendency to believe that granting unconditional water rights ensures that the market will automatically solve any problems which may arise. Practical experience seems to show that this is not so, however. In Chile there are problems of monopolies, of the settlement of conflicts involving several parties, and of the subordination of environmental aspects to the economic exploitation of the resources.

This is why there are proposals for the reform of the water legislation in Chile. The proposed changes include both the possibility of establishing conditions for the cancellation of rights and the introduction of permits or charges for water use, in order to avoid blockage of markets through the cornering of water for speculative reasons. As the rights granted so far in Chile have been free of any type of condition –and especially without any requirement for effective and beneficial use– however, some experts hold that measures to change the conditions governing such rights would require a reform of the Constitution.

The present author does not agree with this view, since the practical effect of such changes would be to give water a functionally private character in Chile. As we have seen earlier, similar situations in the United States were settled through the imposition of conditions on water rights as part of the government's legitimate exercise of police rights over a good in the public domain. Indeed, in the Lake Michigan case the granting of property rights over a good in public trust was considered to be null and void, since the State cannot renounce such trust. There is a clear analogy with the Chilean case: if goods are part of the public domain, the State must carry out its public trust obligations. If the goods are not part of the public domain because of the way in which the rights were granted, then there will have been a highly questionable functional transfer of public domain goods, since public property would be merely a meaningless label.

However, the purpose of this article is not to find a way of reversing the Chilean situation –which, leaving aside considerations of local and comparative law, is linked to the current time and space and to the prevailing political philosophy– but to show that even though there may be situations of monopoly and speculation, as several authors note, once unconditional rights have been granted it is very difficult to reverse the situations thus created. This is why it is vitally important that reforms to water legislation in South America should not permit the granting of unconditional water rights. The obligation to make effective and beneficial use of the resource and protection for effective works carried out are means for the prevention of monopolies.

Once the obligation for effective use has been established, the logical question is what will happen if this obligation is not complied with in the legal or agreed time limit. There are three options in this respect:

a) After expiry of the time limit without any use of the resource, the rights themselves expire and revert to the market through the State. The blockage of the market is thus lifted through the action of the State and the law. This is the solution which we have already seen in United States, Mexican, Spanish and Argentine law, and which in the present author's view is expedient and expeditious. It has the advantage that the State is obliged to declare the cancellation of the rights and a private individual can denounce the situation and demand legal action in that respect.

b) After expiry of the time limit without any use of the resource, the State is obliged to call a public auction, either *ex officio* or at the request of one of the parties. The procedures are simple, and the good is immediately placed on the market again, so that the blockage of the market is ended by the market forces themselves. The requirement for an auction once the time limit has expired is in the public interest, and the State cannot refuse. As the holder of the rights which have been cancelled made no investments in their use, the resources collected go to a general water

management fund or the general treasury, and the former holder is not allowed to participate in the auction. This alternative is simple, eliminates any discretionality on the part of the State, and permits the rapid return of the goods to the market through the latter's own dynamics. Furthermore, it does away with problems of inactive ownership and discourages and controls monopolies. In short, the market acts as a functional corrective.

c) Finally, it has been suggested that the problem of speculative, monopolistic or unused rights should be solved through a tax, paid permit or other type of charge for unused water resources. In the present author's view, this is the least desirable of all these systems, because: i) It would be necessary to determine the opportunity costs for each holder of rights which are not used, which would be no small task because it would require a high degree of information and follow-up and quite sophisticated regulatory machinery; ii) in order to determine the opportunity costs it would be necessary to obtain information from enterprises which would themselves be affected by the proposed taxes or other charges, so that this information would be either hard to get or distorted (it is worth recalling in this respect the inadequate or biased information on privatized public services); iii) the proposed tax or other charges would have to be set high enough to act as a deterrent. It may be assumed that the big public service enterprises which monopolize water resources have more than sufficient capacity to influence these processes and con-

trol their outcome. The phenomenon of co-opting of regulators is well known in public services, and there is no reason to assume that it would not take place in the case of water management; and iv) the whole process of determining the opportunity costs and the proposed charges, as well as their implementation, would be subject to a high degree of State discretionality and would also depend on the State's capacity to act in an expeditious manner.

In the view of the present author, water rights markets are, when properly regulated and controlled, a suitable means of promoting more efficient allocation of water resources. The necessary conditions for this include, *inter alia*: i) adequate information; ii) suitable legislation and clear and dependable rights; iii) a suitable system of management, surveying and registration of water resources and water rights; iv) an efficient system of water storage and transport; v) requirements for effective and beneficial use of the resource; vi) public scrutiny and control of transfers of rights, with the possibility of opposition as detailed earlier in this report and with special rules for the sectors with less education, information or cultural advantages.

The conditions detailed above are essential prerequisites. Without them, the implementation of a system of water rights markets will run into serious problems and give rise to economic and social problems.

(Original: Spanish).

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