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Slippery Property Rights: Multiple Water Uses and the Neoliberal Model in Chile, 1981-1995

ABSTRACT

Fifteen years ago Chile adopted a neoliberal Water Code characterized by strong private property rights, market forces and incentives, and weak state regulation. Chile remains the leading international example of free market water policies. Coordinating multiple water uses is left to private bargaining among the owners of water rights, with conflicts going to a judiciary that has expanded powers. A case study of irrigation-hydroelectric relations shows the current model for river basin management to have serious flaws. The results highlight some of the limitations of free market environmental policies, particularly their dependence on effective legal and institutional frameworks.

In recent years, the popularity of free markets has spread to problems of environmental regulation and natural resource management. "Market-friendly" policies have been proposed to help solve a wide variety of these problems, including those involving water use. This article examines the case of water rights and river basin management in contemporary Chile, a rare example of the application of strong free market policies. The model has had mixed results; the task of coordinating multiple

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water uses has proven especially difficult. The Chilean case demonstrates the importance of legal and institutional frameworks to how markets work or fail to work. Many proponents of market-friendly environmental policies, particularly economists, oversimplify two crucial processes that market forces depend on but cannot carry out themselves: "defining" property rights and resolving conflicts.

Advocates of free market environmental and water policies base their arguments on dominant traditions in neo-classical economics and the related field of "law-and-economics," particularly the laissez-faire views associated with the University of Chicago.[1] It is important not to caricature this approach or to set up the Chicago school as a straw man, since at its best the approach is sophisticated and nuanced. However, it is often the cruder versions that shape debate on public policy. Much of the analysis revolves around property rights. Advocates of markets argue that markets increase economic efficiency by allocating resources to their most valuable uses. Because the essence of the market is exchange, property rights must be legally defined as private, exclusive and transferable. Secure ownership is an incentive to invest in greater productivity of resource use, while freedom to trade provides the flexibility to reallocate rights according to changing social demands. From this perspective the state should intervene in private activities as little as possible, aiming instead to protect property, reduce transactions costs, and enforce contracts.

Such policies also draw on the benefits of the price system. Prices allow things with different values to be measured and compared; the ease with which they coordinate dispersed information and individual preferences is one of the market's great advantages over central planning. By distorting prices, state regulations and subsidies commonly distort patterns of resource use and reduce efficiency. Market incentives help to "get prices right," to use the common phrase, thereby stimulating people to use resources more efficiently as demands increase. In theory, these incentives

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1. *See generally* the following works by important representatives of the "Chicago" perspective: Armen A. Alchian & Harold Demsetz, *The Property Right Paradigm*, 33 J. ECON. HISTORY 16 (1973); RONALD HARRY COASE, THE FIRM, THE MARKET, AND THE LAW (1988); ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS (1988); MILTON FRIEDMAN, CAPITALISM AND FREEDOM (1962); RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW (3rd ed. 1986). The same perspective is applied to environmental issues in TERRY L. ANDERSON & DONALD R. LEAL, FREE MARKET ENVIRONMENTALISM (1991); WORLD BANK, WORLD DEV. REPORT 1992: DEV. AND THE ENV'T (1992). It is applied to water resources in WATER RIGHTS: SCARCE RESOURCE ALLOCATION, BUREAUCRACY, AND THE ENVIRONMENT (Terry Lee Anderson ed., 1983); Mark W. Rosegrant & H. Binswanger, *Markets in Tradable Water Rights: Potential for Efficiency Gains in Developing Country Water Resource Allocation*, 22 WORLD DEV. 1613 (1994); MARK W. ROSEGRANT & RENATO GAZMURI SCHLEYER, TRADABLE WATER RIGHTS: EXPERIENCES IN REFORMING WATER ALLOCATION POLICY (USAID (U.S. Agency for Int'l Dev.), ISPAN (Irrigation Support Project for Asia & the Near East) Report No. 68, 1994).

also force rights-holders to consider the external costs of their actions, i.e., their impact on other rights-holders and on the environment. According to this view, often popularly known as the "Coase Theorem," private bargaining among property owners is better than state regulation at internalizing externalities, provided that transactions costs are low.[2]

In U.S. water policy, the Chicago school is influential in debate but generally considered too extreme to put into practice. While there is a great deal of interest in water markets, many people who see their potential advantages nonetheless oppose a laissez-faire approach. Many of those opposed are economists arguing in orthodox terms that water resources involve public goods and market failures.[3] Free market doctrines have been much more influential in Latin America, both in Chile and other countries, where they are often called "neoliberal."[4] The World Bank has strongly promoted neoliberal policies.[5] Neoliberal economists tend to downplay the importance of market failures and focus instead on state failures.

Beginning in the mid-1970s, the Chilean military government adopted neoliberal approaches to many of its economic and social policies. Because water resources are especially critical in Chile's semi-arid climate, the government passed a new Water Code in 1981 that radically restructured the previous water rights system along neoliberal lines. Water rights are now considered fully private property. Their owners have wide

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2. *See, e.g.*, Rosegrant & Binswanger, Rosegrant & Gazmuri, WORLD BANK, *supra* note 1. The Coase Theorem has been expressed in varying forms and has been the subject of countless pages of analysis and commentary, which I do not propose to review in this article. *See generally* Robert Cooter, *The Cost of Coase*, 11 J. LEGAL STUD. 1 (1982); COOTER & ULEN, *supra* note 1; Alan Randall, *Coasian Externality Theory in a Policy Context*, 14 NAT. RESOURCES J. 35 (1974); Warren J. Samuels, *The Coase Theorem and the Study of Law and Economics*, 14 NAT. RESOURCES J. 1 (1974). Ronald Coase himself has criticized much of the theorem's application by others, particularly the assumption of low transactions costs. *See* COASE, *supra* note 1, at 1-31.

3. *See generally* Victor Brajer et al., *The Strengths and Weaknesses of Water Markets as they Affect Water Scarcity and Sovereignty Interests in the West*, 29 NAT. RESOURCES J. 489 (1989); SCARCE WATER AND INSTITUTIONAL CHANGE (Kenneth D. Frederick, ed., 1986); MARIE LEIGH LIVINGSTON, DESIGNING WATER INSTITUTIONS: MARKET FAILURES AND INSTITUTIONAL RESPONSE, (World Bank Policy Research Working Paper No.1227, 1993); BONNIE COLBY SALIBA & DAVID B. BUSH, WATER MARKETS IN THEORY AND PRACTICE: MARKET TRANSFERS, WATER VALUES, AND PUBLIC POLICY (1987); Zach Willey, *Behind Schedule and Over Budget: The Case of Markets, Water, and the Environment*, 15 HAR. J.L. & PUB. POL'Y 391 (1992).

4. "Neoliberal" refers to a revival of 19th century economic liberalism, not the liberal tradition in U.S. politics. In the United States, the same views would be called "conservative" or "neoconservative."

5. WORLD BANK, *supra* note 1; WORLD BANK, Peru: A User-based Approach to Water Management and Irrigation Dev., Sector Report No.13642 (1994). For a further discussion of the Bank's views on water policy, see Carl J. Bauer, *Bringing Water Markets Down to Earth: The Political Economy of Water Rights in Chile, 1976-95*, 25 WORLD DEV. 639 (1997).

autonomy over how they are used. Market mechanisms and incentives are prominent, and the regulatory powers of the state water agency are greatly reduced. The task of coordinating different water uses at the level of river basins is left mainly to voluntary bargaining among private rights-holders and their organizations. Because state administrative intervention is so limited, when bargaining fails the conflicts are supposed to be settled by the ordinary civil courts, which have expanded powers under the 1980 Constitution. River basin management has been somewhat complicated by the Water Code's creation of a new kind of property right for "non-consumptive" water uses, mainly hydroelectric power generation.

Part I of this paper describes Chile's 1980 Constitution and "new institutional order," emphasizing the new role of the courts. Part II summarizes the 1981 Water Code and highlights its provisions for multiple water use. Part III addresses judicial activity in water rights cases. The focus then shifts to the specific problems raised by non-consumptive rights in Part IV. Part V illustrates these issues with a case study of irrigation-vs.-hydroelectric conflicts in the Maule and Bío Bío River basins in south-central Chile. Finally, Part VI discusses the relationship between these issues and recent debates in Chile over reforms to river basin management. The Chilean case demonstrates some of the limitations of market-driven water policies, and highlights their dependence on legal and institutional structures.[6]

I. THE "NEW INSTITUTIONAL ORDER": THE "ECONOMIC" CONSTITUTION AND THE NEW ROLE OF THE COURTS

The essential features of the 1981 Water Code reflect the economic model and *nueva institucionalidad* (new institutional order) established by the Chilean military government, which was in power from 1973 to 1990. The government and its civilian advisors sought to radically transform Chilean society and political economy and to consolidate and

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6. In this paper I do not discuss the Chilean water market itself, since for the most part sales of water rights are confined to the agricultural sector. *See* CARL J. BAUER, AGAINST THE CURRENT: PRIVATIZATION, WATER MARKETS, AND THE STATE IN CHILE (forthcoming 1998); Bauer, *supra* note 5.

In addition to the documents and other evidence cited in this article, I also draw extensively from interviews with dozens of people in Chile between 1991 and 1995, both in the local study areas and at the national level in Santiago. They include farmers, engineers and administrators of the more important private canal associations, engineers and managers of electric power companies, government functionaries in the local, regional, and national offices of various agencies in the Ministries of Agriculture and Public Works, lawyers working in water rights, staff of non-governmental organizations working in agricultural and rural development, university professors, and experts in United Nations organizations. I am grateful to all of them for their cooperation.

institutionalize the changes. Beginning in the mid-1970s, the government adopted a series of economic policies that favored free markets, private ownership and enterprise, and the free flow of international capital and trade. At the same time, the government sharply reduced the state's role in economic planning, production, and provision of social services. The program was designed by a group of neoliberal economists known as "los Chicago Boys," so called because of their training in the free market and monetarist views of the University of Chicago. As measures protecting national industry from foreign competition were dismantled, economic activities shifted to export-led development based on the country's rich and diverse natural resources: minerals, forests, agriculture, and fish.[7] After a decade of adjustment, temporary boom, and crisis, the economy has grown steadily since 1985 and has become the envy of many other developing countries. Chile is widely considered a textbook example of successful free market reforms. In 1990, a civilian government came into power, a center-left coalition made up of the military regime's political opponents, called the Concertación de Partidos por la Democracia ("Concertación").[8] The Concertación has retained, essentially unchanged, the economic model established by the military government.[9]

In the formative period from the mid-1970s to early 1980s, the military government accompanied its economic program with a sustained effort to redesign the political system. The effort culminated in 1980 with the adoption of a new Constitution, which is still in effect.[10] The previous Constitution of 1925 had established a presidentialist democracy. It had both a strong executive branch and a relatively strong legislature, in a pluralist political system with political parties playing a central role. The military and its civilian advisors criticized the 1925 Constitution and its associated political system for having been too weak to prevent the growth of radical movements and social polarization in the 1960s and early 1970s. Those movements and polarization finally led to the military coup in 1973.

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7. Andrés Gómez-Lobo, *Las Consecuencias Ambientales de la Apertura Comercial en Chile* (Colección Estudios Cieplan No.35, 1992).

8. Coalition of Parties for Democracy.

9. The political and economic changes under the military government have been extensively studied. *See* THE CHILEAN ECONOMY: POLICY LESSONS AND CHALLENGES (Barry P. Bosworth et al. eds., 1994); HERNÁN BÜCHI BUC, LA TRANSFORMACIÓN ECONÓMICA DE CHILE: DEL ESTATISMO A LA LIBERTAD ECONÓMICA (1993); PAMELA CONSTABLE & ARTURO VALENZUELA, A NATION OF ENEMIES: CHILE UNDER PINOCHET (1991); THE STRUGGLE FOR DEMOCRACY IN CHILE, 1982-90 (Paul W. Drake & Ivan Jaksic eds., 1991); BRIAN LOVEMAN, CHILE: THE LEGACY OF HISPANIC CAPITALISM (1988); MILITARY RULE IN CHILE: DICTATORSHIP AND OPPOSITIONS (Arturo Valenzuela & J. Samuel Valenzuela eds., 1986); EL MODELO ECONÓMICO CHILENO (Daniel L. Wisecarver ed., 1992).

10. CONSTITUCIÓN POLÍTICA DE LA REPÚBLICA DE CHILE. For a more extensive discussion of the nature and significance of the Constitution, *see* BAUER, *supra* note 6, chap. II.

In contrast to the 1925 Constitution, the 1980 Constitution combines an overall ideological vision of society and state with a detailed legal blueprint for a "new institutional order" to make the vision concrete.[11] The Constitution expands and fortifies private property rights and economic liberties while limiting the state's economic activities to a "subsidiary" role.[12] It separates organizations of civil society from political parties in order to reduce the latter's influence. It redefines the separation of powers within the government in order to increase technocratic authority and restrict popular sovereignty and participation. Thus, the 1980 Constitution strengthens the executive branch and weakens the legislative branch, counter-balancing the former by creating or strengthening several autonomous, non-elected institutions.[13] The Constitution's drafters argued that these institutions were "technical" and "non-political" because their members were not elected and therefore not beholden to political parties.[14]

The Constitution does not explicitly require a market economy. However, it aims to guarantee the legal, political, and social conditions necessary for such an economy to develop. Most analyses of the Constitution, both Chilean and foreign, have been political in nature, generally focusing on the Constitution's authoritarian and anti-democratic features.[15] The Constitution's economic significance has been largely

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11. General sources on the 1980 Constitution include NEVILLE BLANC ET AL., LA CONSTITUCIÓN CHILENA (1990); CONSTITUCIÓN POLÍTICA DE LA REPÚBLICA DE CHILE: CONCORDANCIAS, ANOTACIONES Y FUENTES (Luz Bulnes Aldunate ed., 1981); JOSÉ LUIS CEA EGAÑA, TRATADO DE LA CONSTITUCIÓN DE 1980: CARACTERÍSTICAS GENERALES, GARANTÍAS CONSTITUCIONALES (1988). The views of the Constitution's principal architect are collected in *El Miedo y Otros Escritos: El Pensamiento de Jaime Guzmán Errázuriz* 251 (Arturo Fontaine Talavera ed., Revista de Estudios Públicos No.42, 1991).

12. The Constitution also adds a new but fairly weak right "to live in an environment free of contamination." CONSTITUCIÓN POLÍTICA DE LA REPÚBLICA DE CHILE art. 19(8).

13. Those institutions are the Armed Forces, Constitutional Tribunal, Judicial Power, National Security Council, and Central Bank. In addition, the Senate includes a number of senators who are "designated" by these institutions rather than popularly elected. *See generally supra* note 11.

14. *See* Fontaine, *supra* note 11.

15. For foreign commentary see Alan Angell, *The Transition to Democracy in Chile: A Model or an Exceptional Case?*, 46 PARLIAMENTARY AFFAIRS 563 (1993); Mark Ensalaco, *In with the New, Out with the Old? The Democratizing Impact of Constitutional Reform in Chile*, 15 CANADIAN J. LATIN AM. & CARIBBEAN STUDIES 409 (1994); Brian Loveman, *¿Misión Cumplida? Civil-Military Relations and the Chilean Political Transition*, 33 J. INTERAMERICAN STUDIES & WORLD AFFAIRS, Fall 1991, at 35; Anthony Holland O'Malley, *Chile's Constitution, Chile's Congress: Prospects for Judicial, Legal, and Constitutional Reform*, 15 CANADIAN J. LATIN AM. & CARIBBEAN STUDIES 85 (1994); Arturo Valenzuela, *The Military in Power: The Consolidation of One-Man Rule*, in Drake & Jaksic eds., *supra* note 9. Chilean commentary includes INSTITUTO CHILENO DE ESTUDIOS HUMANÍSTICOS, UNA SALIDA POLÍTICO CONSTITUCIONAL PARA CHILE : EXPOSICIONES Y DEBATE DEL SEMINARIO "UN SISTEMA JURÍDICO-POLÍTICO CONSTITUCIONAL PARA

ignored, except for brief comments on the importance of political stability and secure private property rights. The Constitution establishes what is called the "public economic order," which consists of broad private economic rights and liberties accompanied by sharp limits on state economic activities and regulatory powers.[16] Some of the more authoritarian political features were removed in 1989 in reforms negotiated between the military, the incoming Concertación government, and the largest right-wing political party.[17] The economic provisions were untouched. Thus, having gained legitimacy through the reform but with its essential structure intact, the Constitution has been maintained through the transition to democratic rule.

An often-overlooked feature of the current framework is the expanded power of the judiciary. The courts play a strategic role in a legal-economic model dominated by private initiative. The Chilean courts now have broad and flexible authority to protect private constitutional rights and to control state administrative actions. Historically such judicial review was considered a violation of the separation of powers in Chile, a reflection of the civil law tradition.[18] The 1925 Constitution provided for special administrative courts to be established independently of the ordinary judiciary, with authority over disputes between private parties and state agencies. However, Congress never passed the enabling legislation needed to set up the special courts, and in their absence the ordinary courts refused to assume jurisdiction. For nearly fifty years, the supreme court insisted that without explicit constitutional mention it could not review administrative actions. Injured parties were left with no legal recourse during the decades

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CHILE" (1985); LA CONSTITUCIÓN DE 1980: UNDÉCIMAS JORNADAS DE DERECHO PÚBLICO, NOVIEMBRE 1980 (Revista de Derecho Públíco Nos.29-30, 1981).

16. BAUER, *supra* note 6, at chap. II; CEA EGAÑA, *supra* note 11; ENRIQUE EVANS DE LA CUADRA, LOS DERECHOS CONSTITUCIONALES (1986).

17. See Ensalaco, Loveman, O'Malley, *supra* note 15. Chile's foremost political journalist puts the 1989 reforms at the heart of his analysis of the transition to democracy, ASCANIO CAVALLO, LOS HOMBRES DE LA TRANSICIÓN (1992). The right-wing political party is Renovación Nacional.

18. Civil law systems have a somewhat different notion of the separation of governmental powers than common law systems. In civil law systems, the judiciary has a position subordinate to the legislative and executive branches. Only the latter two have the authority and legitimacy to make laws, while the function of judges is limited to applying those laws. This division of authority is reinforced by the traditional distinction between private law and public law. "Private law" concerns the relations among individuals (about family, commerce, property, etc.), while "public law" deals with the state and its relations with its citizens—the former falls within the judicial realm, but not the latter. *See* Nicholas D. S. Brumm, *Divergent Models of Public Law in Latin America: A Historical and Prescriptive Analysis*, 24 U. MIAMI INTER-AM. L. REV. 1 (1992); KENNETH KARST & KEITH ROSENN, LAW AND DEVELOPMENT IN LATIN AMERICA: A CASE BOOK (1975); JOHN HENRY MERRYMAN, THE CIVIL LAW TRADITION (2d ed. 1985); MARTIN M. SHAPIRO, COURTS: A COMPARATIVE AND POLITICAL ANALYSIS (1981); TRANSITION TO DEMOCRACY IN LATIN AMERICA: THE ROLE OF THE JUDICIARY (Irwin Stotzky ed., 1993).

of greatest expansion of the modern regulatory state, culminating in the reformist government of Eduardo Frei Montalva (1964-1970) and the socialist government of Salvador Allende (1970-1973).[19] The Agrarian Reform of 1967-73 was the most prominent example of expanding state intervention at the expense of private property rights, which courts were powerless to control.

To combat this tendency, the military government created a new legal action to assert and defend constitutional rights called the *recurso de protección*.[20] The *recurso* is one of the Constitution's major innovations. It grants standing in a wide variety of situations for people to request immediate judicial review of alleged violations of their rights, whether by state agencies or by private parties.[21] These suits go directly to the regional appellate courts. The courts are supposed to rule quickly and have broad authority to order whatever measures they may "judge necessary to reestablish the rule of law and the due protection of the affected person."[22] This authority, analogous to U.S. courts' power to order injunctive relief, is a new power for Chilean courts whose remedies have traditionally been limited to ordering payment of financial damages. In theory, decisions on *recursos* are designed to remedy an immediate wrong, not to substitute for the more thorough civil procedures needed to sort through complex problems. Even so, the new judicial control over the administration has arguably made special administrative courts unnecessary. The appellate courts' decisions on *recursos de protección* are often appealed to the supreme court.[23]

In practice, the *recurso de protección* has had its strengths and weaknesses. Most Chilean lawyers like it: it is often a fast and effective way

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19. The situation has been much discussed and criticized by Chilean legal scholars. *See, e.g.*, Hugo Caldera, *Los Tribunales Ordinarios de Justicia y el Control de Constitucionalidad del Acto Administrativo* 191, (Revista de Derecho Público Nos. 39-40, 1986); Ronaldo Pantoja Bauza, *Los Tribunales Contencioso Administrativos en la Constitutión Política de 1980*, 82 GACETA JURÍDICA 3 (1987); Lautaro Ríos Alvarez, *Los Tribunales de lo Contencioso Administrativo y el Art. 38 de la Nueva Constitución*, 195 (Revista de Derecho Público Nos. 29-30, 1981); EDUARDO SOTO KLOSS, EL RECURSO DE PROTECCIÓN: ORÍGENES, DOCTRINA Y JURISPRUDENCIA (1982).

20. Suit or petition for protection.

21. The *recurso* was first established in 1976 in Constitutional Act No.3, and then included in the 1980 Constitution as Article 20. CONSTITUCIÓN POLÍTICA DE LA REPÚBLICA DE CHILE art. 20. It was patterned after the existing *recurso de amparo*, which allowed immediate judicial review of state deprivations of individual freedom (similar to habeus corpus in other legal systems). The classic text on the *recurso de protección* is SOTO KLOSS, *supra* note 19. *See also* CEA EGAÑA, *supra* note 11; EVANS DE LA CUADRA, *supra* note 16.

22. CONSTITUCIÓN POLÍTICA DE LA REPÚBLICA DE CHILE art. 20.

23. The right to live in a clean environment can be defended only by a weaker and more restricted *recurso de protección*. *See supra* note 12. To win a normal *recurso* the plaintiff must show the defendant's "act or omission" to be "arbitrary or illegal"; to win an environmental *recurso*, the defendant's "act" (not omission) must be "arbitrary and illegal." *See* SOTO KLOSS, *supra* note 19, CEA EGAÑA, *supra* note 11, EVANS DE LA CUADRA, *supra* note 16.

to get a response from a legal system plagued by formalities and delays. Although it is an ad hoc response, to the people involved that may be better than no response, at least in the short run. The popularity of the *recurso* has grown as a result of its speed and it has become a commonly used tactic in the routine practice of law.[24] The leading national expert on the *recurso* argues that it has caused a "silent revolution" in judicial performance, as judges have begun to wield their new powers actively and creatively.[25] Other legal experts agree that the *recurso* is in effect creating administrative law, although they have differing views about the results.[26]

But the *recurso*'s speed and ad hoc character are also its flaws.[27] Some experts argue that although the *recurso* is a useful device, it is not an adequate substitute for systematic administrative law. Appellate courts throughout the country have been faced with growing numbers of these *recursos*, often involving economic and regulatory issues with significant policy implications. Judges are forced to decide cases with limited information or technical expertise, few legislative or constitutional guidelines, and little time for deliberation. While their decisions may be creative and flexible, not surprisingly they are also unpredictable and sometimes contradictory. Nonetheless, the *recurso* is so popular that despite its limited purpose and scope, it has in fact replaced many of the slower, declarative procedures of the lower courts. Neither the appellate courts nor the supreme court have so far provided much unifying or systematic doctrine in this area. Nor will court decisions evolve in the incremental way familiar to common law systems, since in Chile, as in other civil law systems, such decisions do not establish binding precedents for other cases.[28]

The pros and cons of the *recurso de protección* reflect the general condition of the judicial system. This is the subject of many debates in Chile where it is widely agreed that modernizing the system is overdue.[29] Some

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24. This is sometimes called the "constitutionalization" of private law: lawyers now carry their copy of the Constitution to court, whereas before it was of interest only to scholars. Interview with José Bidart, Law Professor, University of Concepción, in Concepción, Chile (Dec. 17, 1992).

25. Eduardo Soto Kloss, *1976-1986: Diez Años de Recurso de Protección: Una Revolución Silenciosa*, 83 REVISTA DE DERECHO & JURISPRUDENCIA 157 (1986).

26. *See generally* Arturo Aylwin Azócar, *Relación de la Comisión Derecho Administrativo*, 11 REVISTA CHILENA DERECHO 519 (1984); Pedro Pierry Arrau, *Lo Contencioso Administrativo en la Constitución Política de 1980: Competencia del Poder Judicial Hasta la Dictación de la Ley*, 29-30 REVISTA DERECHO PÚBLICO 209 (1981); Alejandro Vergara Blanco, *La Propietarización de los Derechos*, 14 REVISTA DERECHO U. CATÓLICA VALPARAISO 281 (1991).

27. *See generally supra* note 26.

28. *See generally supra* note 18 and accompanying text.

29. COMISIÓN DE ESTUDIOS DEL SISTEMA JUDICIAL CHILENO, PROPOSICIONES PARA LA REFORMA JUDICIAL (1991); JUAN ENRIQUE VARGAS & JORGE CORREA SUTIL, DIAGNÓSTICO DEL SISTEMA JUDICIAL CHILENO (1995).

reforms depend primarily on increased funding and administrative support.[30] Other problems, however, are deeply rooted in the Chilean legal tradition. Unlike the common law system, Chilean judges have a highly formalistic and narrowly defined view of their job. They perceive their job as applying the law, not making it. They prefer strict and literal interpretation and generally refuse to consider non-legal factors, tendencies which are most pronounced in the higher courts.[31] As a result, judges lack the training, experience, or inclination to enter substantive policy issues. They typically decide cases on strictly formal grounds. However, criticizing judicial behavior is politically sensitive in Chile, and both the courts and other conservative interests have blocked the more ambitious proposed reforms.

The courts now have a curious hybrid position in Chilean political economy and public policy. They have a more critical and strategic role to play, and more and wider powers with which to play it. Both changes shift the courts towards the common law model of active and independent judges. On the other hand, the Chilean judiciary remains dominated by a legal and professional tradition that is ill-prepared for such a change. In addition, the system is handicapped by its lack of financial and administrative resources.[32]

II. A NEOLIBERAL WATER LAW: FRAMEWORK FOR RIVER BASIN MANAGEMENT

In 1981, the Chilean military government adopted a new Water Code that reflected the overall economic and political model it was putting into place.[33] The new Code reversed the principles of the previous Water Code, which had been passed in 1967 as part of the controversial Agrarian Reform Law. The Agrarian Reform aimed to expropriate and redistribute large landholdings with the dual purposes of expanding the class of small

30. Jaime Del Valle, *El Fortalecimiento del Poder Judicial Chileno* 15 (REVISTA CHILENA DERECHO 37 (1988); José María Eyzaguirre, *Los Problemas del Poder Judicial*, EL MERCURIO, June 5, 1992, at A2.

31. Enrique Barros, *Tensiones del Derecho Actual*, 88 REVISTA DERECHO & JURISPRUDENCIA 9 (1991); COMISIÓN DE ESTUDIOS DEL SISTEMA JUDICIAL CHILENO, *supra* note 29; Pablo Ruíz-Tagle, *Análisis Comparado de la Función Judicial*, 39 REVISTA ESTUDIOS PÚBLICOS 131 (1990). *See generally supra* note 18 and accompanying text. On the supreme court, see Gaston Gómez, *Corte Suprema: Análisis de Algunos de sus Comportamientos*, 82 GACETA JURÍDICA 15 (1987); Eugenio Somarriva Valenzuela, *Labor Jurisdiccional de la Corte Suprema*, COMISIÓN DE ESTUDIOS DEL SISTEMA JUDICIAL CHILENO, *supra* note 29, at 141-77 (1991).

32. BAUER, *supra* note 6, chap. II. *See generally supra* note 18 and accompanying text.

33. The Code was dictated on October 29, 1981, as Decree with Force of Law (DFL) 1,122 (Chile Diario Oficial). In Chile, a DFL is issued by the executive but has the force of legislation. *See* CEA EGAÑA, *supra* note 11.

landholders and modernizing agricultural production.[34] In Chile's semi-arid climate, agriculture requires irrigation. Therefore, land reform also had to redistribute water. The law sharply increased state authority over water rights and was accompanied by a constitutional amendment declaring all existing water rights to be public property.[35] In contrast, the 1981 Code enlarged and strengthened private property rights, separated water rights from land ownership, promoted market forces and mechanisms, and reduced the state's role in water resource management and regulation. The Code remains in effect essentially unchanged in spite of several attempted reforms by the Concertación government that has been in power since 1990.[36]

The 1981 Water Code has two main objectives that reflect the different interests within the government that were pushing for reform: first to increase the legal security of private water rights, thereby putting an end to the confusion over ownership left by the Agrarian Reform, and second, to raise the efficiency and productive value of water uses by relying on market forces. Farmers and other agricultural interests supported the first objective, as did most water lawyers and irrigation engineers in both the public and private sectors. They argued that secure property rights would encourage investment in irrigation and revitalize the dormant canal users' associations. Neoliberal economists favored both objectives. They argued that the real boost in efficiency would come from price incentives and private trading. Market mechanisms would motivate people to save water in order to sell the surplus, and to transfer rights to higher-valued uses within agriculture or to other sectors of the economy. The final version of the Code was a compromise negotiated between the two positions. In particular, agricultural interests and their allies defeated a proposal to

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34. *See* JOSÉ ROJAS GARRIDO ET AL., HISTORIA DE LA REFORMA AGRARIA EN CHILE (1988); LOVELL S. JARVIS, CHILEAN AGRICULTURE UNDER MILITARY RULE: FROM REFORM TO REACTION, 1973-1980 (1985); Lovell S. Jarvis, *The Unraveling of Chile's Agrarian Reform, 1973-1986, in* WILLIAM C. THIESENHUSEN, SEARCHING FOR AGRARIAN REFORM IN LATIN AMERICA, 240-75 (1988); Law of Agrarian Reform, No. 16,640 (D.O. 1967).

35. The 1967 law's provisions on water rights (código de aguas; con las modificaciones introducidas por la ley no. 16.640, sobre reforma agraria) were published separately as a Water Code, DFL No.162 (Chile 1969). This was Chile's second code. The first was passed in 1951. For historical background see generally Bauer, *supra* note 5, and BAUER, *supra* note 6, chap. III.

36. Overviews of the 1981 Water Code can be found in Bauer, *supra* note 5; BAUER, *supra* note 6, chap. III; and also Carl J. Bauer, *Los Derechos de Agua y el Mercado: Efectos e Implicancias del Código de Aguas Chileno de 1981*, 4 REVISTA DE DERECHO DE AGUAS 17 (1993). *See also* MONICA RÍOS BREHM & JORGE QUIROZ CASTRO, THE MARKET OF WATER RIGHTS IN CHILE: MAJOR ISSUES (World Bank Technical Paper No. 285, 1995); Rosegrant & Gazmuri, *supra* note 1.

promote reallocation of water rights by taxing them separately from land, which neoliberals had argued was vital to the new system.[37]

In form, the new Code declares that water is public property, to which the state can grant private rights of use. In substance, however, the Code strengthens private control over use-rights in several innovative ways. For the first time in Chilean history, water rights are now completely separate from land ownership. They can be freely bought, sold, mortgaged, and transferred like real estate. The state water rights agency, the *Dirección General de Aguas* (DGA),[38] grants requests for new rights free of charge whenever water is physically and legally available. However, once constituted, all water rights are governed by private or civil law rather than public or administrative law. They are subject to the general system of real estate title registration and are fully protected as private property under the 1980 Constitution.[39] The Code also recognizes all rights granted or acquired under previous laws. In theory, all water rights must be measured in terms

37. Bauer, *supra* note 5, and BAUER, *supra* note 6, chap. III.

38. General Water Directorate.

39. CONSTITUCIÓN POLÍTICA DE LA REPÚBLICA DE CHILE art. 19(24). The Code declares waters to be "national property of public use" (*bienes nacionales de uso público*), a legal category which by definition cannot be alienated from public ownership nor enter into private commercial relations. Other examples of this category include roads, streets, plazas, bridges, and beaches. Ownership in Chilean civil law includes the rights to arbitrarily use, enjoy, and dispose of (alienate) the thing owned, as long as others' rights are not affected. Civil Code, Articles 582-583. Thus, an individual can own a water right but not the water itself, since it is only the former that he is free to sell. The distinction seems artificial, and indeed many Chilean water lawyers—even if personally pro-market—consider the Water Code to be juridically incoherent, effectively privatizing a resource which it simultaneously defines as inalienably public. Jorge Ellenberg, Antecedentes Respecto del Nuevo Régimen Legal de Aguas (1980) (unpublished law thesis, Universidad de Chile) (on file with author); Luis Soriano, Las Aguas en Nuestro Derecho (1986) (unpublished law thesis, Universidad de Concepción) (on file with author); Alejandro Vergara Blanco, *Contribución a la Historia del Derecho de Aguas, I: Fuentes y Principios del Derecho de Aguas Chileno Contemporáneo, 1818-1981*, 1 REVISTA DE DERECHO DE MINAS & AGUAS 111 (1990); Alejandro Vergara Blanco, *Hipótesis para una Reconstrucción Historica y Dogmática del Derecho de Aguas*, 49 REVISTA DERECHO PÚBLICO 217 (1991). Others defend the Code's definition as the only way to harmonize market logic with the essential "peculiarity" of the resource. *See* BERNARDINO ESCUDERO AHUMADA, LA POSESIÓN DEL DERECHO DE APROVECHAMIENTO DE AGUAS (1990); Luis Simón Figueroa del Río, *Estatuto Jurídico de las Aguas: Evolución Histórica y Cultural* 25 (DERECHO EN LA REGIÓN No. 1, 1992); Instituto Libertad y Desarrollo, Análisis y Comentario de la Propuesta Reforma del Código de Aguas (1993) (unpublished manuscript) (on file with author).

The legal distinction between public ownership of water and private ownership of water rights is also common in the Western United States. *See, e.g.*, JOSEPH L. SAX ET AL., LEGAL CONTROL OF WATER RESOURCES (1991). However, in the U.S. the scope for public regulation of such private rights is much broader than in Chile.

of volume per unit of time, e.g. liters per second, but in practice many are expressed as proportional shares of available flows.[40]

Compared to earlier legislation, private liberties are extensive and state authority is constrained. Rights-holders can freely change the location and use of water rights without administrative approval by the DGA.[41] Applicants for new rights no longer have to specify or justify their intended uses to the DGA. The agency has no discretion to deny such requests if there is water available, nor to decide whom among competing applicants will receive water.[42] If there is not enough water to satisfy simultaneous applications, the DGA must hold a public auction and sell the new rights to the highest bidder.[43] Rights-holders pay no taxes or fees for acquiring rights from the state or for keeping them over time. Unlike earlier laws, they now have no obligation to use their rights and face no penalty or risk of cancellation for lack of use. Such measures were left out of the Code because they were considered invasions of private liberty. Taken together, these provisions allow unregulated speculation in water rights.[44]

The DGA now has little authority over private water use, except during official drought emergencies. Most water management decisions are made by private individuals and especially by private canal users' associations, which have a celebrated tradition in Chile of building and operating canals and distributing water rights.[45] The DGA can neither cancel nor restrict water rights once granted or recognized, except by expropriating and paying for them. Moreover, the ordinary courts now have the adjudicatory powers over water use conflicts formerly exercised by the DGA.[46] Nonetheless, the agency retains several important technical and administrative functions, such as gathering and maintaining hydrologic data, inspecting larger water works such as dams and canals, enforcing the rules governing private water users' organizations, and keeping official, though incomplete, registries of water rights and users' organizations. The DGA also prepares studies, plans and policy recommendations, none of

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40. *See generally supra* note 36.

41. An exception is the DGA approval required when changing the location of diversions from a natural water-course, Water Code, DFL No. 1,122, art. 163 (Chile 1981).

42. Earlier legislation had established a list of different uses in order of priority. *See generally supra* note 35.

43. Water Code, DFL No. 1,122, arts. 141-50 (Chile 1981).

44. In other words, there is no requirement of "beneficial use" as in the Western United States. SAX, *supra* note 39, at 164-69.

45. Raul Matus, *Antecedentes Históricos del Riego en Chile: Situación Actual y Perspectivas Futuras, in* PRIMERA CONVENCIÓN NACIONAL DE REGANTES DE CHILE, at 70-81 (1986); FERNANDO PERALTA T., IDEAS PARA LA DISCUSIÓN DE UNA POLÍTICA DE RIEGO: SU APLICACIÓN EN EL CASO DE CHILE (1989). Some three fourths of Chile's irrigated land is watered by private canals built before 1920, and the rest by state projects built since then.

46. Water Code, DFL No. 1,122, arts. 177-85 (Chile 1981).

which have regulatory force unless approved by other branches of government.[47]

The Water Code does not mandate or establish a market in water rights. Rather, it attempts to set up the legal preconditions for such a market to emerge spontaneously.[48] Because its main concern is irrigation, the Code does little to address multiple water uses or river basin management. The exception is the creation of "non-consumptive" water rights, discussed below in Parts IV and V. The Code grants autonomy in routine administration to several kinds of private water users' organizations, but all of these are designed solely for irrigation.[49] Therefore, coordinating the relations among agricultural, industrial, hydroelectric, domestic and other water uses depends on the Code's general logic rather than on specific provisions. In other words, coordination depends on voluntary bargaining and negotiation among private rights-holders and their representatives. Because the DGA has little power to intervene when private parties clash, conflicts often go to the courts for resolution. These conflicts have grown in complexity over the past fifteen years as Chile's economic development has put growing and diverse pressures on water resources. Current river basin problems include inter-basin water transfers, contamination, and irrigation-hydroelectric relations.[50]

III. JUDICIAL BEHAVIOR IN WATER RIGHTS LAW

Legal expertise in water rights issues is scarce in Chile. Few lawyers or judges know much about the Water Code and even fewer are familiar with water use in practice. The subject is rarely taught in Chilean law schools and has never been lucrative enough to attract many lawyers in private practice. Such a lack of legal expertise is surprising in a semi-arid country where irrigation is historically important and water disputes are common in local folklore.[51] Apparently, these disputes have historically been small scale disagreements between neighboring farmers, more readily settled informally or through private canal associations than by involving lawyers or courts. Irrigation engineers have traditionally been the most knowledgeable about water rights in Chile. In the 1990s, the situation has

47. *See generally supra* note 36.

48. On Chilean water markets in particular, see the works cited *supra* note 36.

49. Water Code, DFL No. 1,122, arts. 186–293 (Chile 1981).

50. *See, e.g.*, CENTRO DE INVESTIGACIÓN Y PLANIFICACIÓN DE MEDIO AMBIENTE, GESTIÓN AMBIENTAL EN CHILE: APORTES DEL CUARTO ENCUENTRO CIENTÍFICO SOBRE EL MEDIO AMBIENTE (1992).

51. It is a striking contrast to the Western United States where water lawyers abound and prosper.

begun to change as the stakes of water problems have grown and expanded.

Water rights conflicts enter the legal system through either the local civil courts or the regional appellate courts.[52] The lower courts have had no role in issues of multiple water use. Rather, their importance has been mainly within the agricultural sector, regularizing many problems of uncertain water rights titles and ruling on disputes between neighboring irrigators. Research in the south-central city of Los Angeles, in the Bío Bío River basin, indicates that local judges often do a reasonable job of sorting through the concrete problems. However, they depend heavily on technical help from the DGA or from canal associations, and cases suffer the long delays characteristic of the Chilean legal system. Because the procedures are slow, costly and unpredictable, very few irrigation disputes are ever taken to court.[53]

The higher courts' treatment of water problems has been ambivalent and somewhat erratic.[54] In many cases, appellate courts and the supreme court have zealously defended private property rights, vigilant against errors or abuses by the DGA. For example, the courts have revoked new water rights granted by the DGA when existing rights-holders showed that they were injured or that the DGA had given them no chance to object.[55] In other cases, the courts have forced the DGA to grant rights by

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52. The appellate courts follow the nation's regional administrative structure, with Regions numbered I through XII from north to south. The Santiago Metropolitan Region in the center of Chile is numbered XIII.

53. *See,* BAUER, *supra* note 6, chap. V. Regularizing title to water rights is discussed in more detail in Bauer, *supra* note 5, and BAUER, *supra* note 6, chaps. III & IV.

54. During 1981-93, there were some 80 higher court decisions published that involved water rights or the Water Code, DFL No. 1,122 (Chile 1981). Also included here are five unpublished decisions. About sixty percent of the cases were brought as *recursos de protección*. The remainder were either more conventional appeals or the specialized appeals provided for in the Water Code (art. 137 establishes a *recurso de reclamación* to appeal DGA decisions). Overall, half of the cases involved challenges to some action of the DGA. BAUER, *supra* note 6, chap. V. Most of the appellate court cases were appealed to the supreme court (53 of 85 cases). The supreme court reversed less than one quarter of those cases. BAUER, *supra* note 6, chap. V.

Chile has no official court reporter to publish higher court decisions, presumably because judicial precedent is not binding as it is in the common law system. Instead there are several legal journals, typically associated with universities, whose editors select which decisions to publish. These are the Revista de Derecho y Jurisprudencia, Gaceta Jurídica, Fallos del Mes (Supreme Court decisions only); and as of 1990 the Revista de Derecho de Minas & Aguas, renamed Revista de Derecho de Aguas in 1993. Although not complete, this system ensures that the most important decisions are published as well as many less important ones.

55. *See, e.g.*, Kegan con DGA (Ct. App. Santiago 1985; Sup. Ct. 1985), 320 FALLOS DEL MES 370 (1985).

declaring its reasons for refusal unfounded.[56] When in doubt, the courts tend to give full constitutional protection to water rights whose legal status is quite debatable. Such rights include those which have never been legally registered,[57] rights that were granted provisionally under the 1967 Water Code but never made definitive,[58] and newly granted rights which the government tried to revoke because there had been administrative errors.[59]

Despite these outcomes, the higher courts have supported the DGA in two thirds of its conflicts with private parties. Several factors explain this pattern. First, judges are reluctant to intervene in technical matters beyond their competence, and often defer to the agency's specialized expertise.[60] Second, in a number of cases judges adopt highly formalistic arguments in order to avoid ruling on substantive policy issues. This tendency is strongest in the supreme court, which is most removed from the facts of any particular case.[61] Third, the DGA has proven that it is careful to obey the limits of its regulatory powers and duties. The agency's staff follow a strict and legalistic interpretation of their functions, wary of being scrutinized by the courts and by the government's Controller General.[62] The DGA's administrative behavior is more likely to be passive than interventionist, which eases the burden of judicial review.

The combination of administrative and judicial formalism works reasonably well in routine matters. However, it is less effective when more

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56. *See, e.g.*, ENDESA con DGA (Ct. App. Santiago 1991), 2 REVISTA DE DERECHO DE MINAS & AGUAS 383 (1991).

57. There are a large but unknown number of rights in this category. *See generally supra* note 53. The landmark case protecting such rights is Mozo con SENDOS (Ct. App. Arica 1984; Sup. Ct. 1985), 316 FALLOS DEL MES 33 (1985). In another case, the supreme court undermined the Water Code's rules designed to regularize titles by declaring that the registered owner of water rights could not lose them even though someone else had been using them for twenty years: Colegio de Ingenieros con Guzmán (Ct. App. Santiago 1990; Sup. Ct. 1990), 384 FALLOS DEL MES 662 (1990). The Code's Transitory Articles contain rules for regularization of titles. Water Code DFL No. 1,122 (Chile 1981).

58. Sociedad de Servicios Urbanos con Contralor General de la República (Ct. App. Santiago 1988; Sup. Ct. 1989), 369 FALLOS DEL MES 483 (1989).

59. Compañía Manufacturera de Papeles y Cartones con DGA (Ct. App. Santiago 1985), 57 GACETA JURÍDICA 56 (1985).

60. *See, e.g.*, Sucesión González con Mac Lean (Ct. App. Punta Arenas 1989), 113 GACETA JURÍDICA 46 (1989); Martini con DGA (Ct. App. Temuco 1987; Sup. Ct. 1987), 343 FALLOS DEL MES 308 (1987); Junta de Vigilancia del Río Teno con DGA (Ct. App. Santiago 1990; Sup. Ct. 1990), 129 GACETA JURÍDICA 107 (1990).

61. *See generally supra* note 31, and accompanying text.

62. The Controller General is an autonomous state agency which supervises the fine points of the legal and financial actions of other state administrative entities. As a watchdog, its powers are more strictly limited than judicial review, but their exercise keeps public officials highly conscious of the letter of the law. *See* BULNES, *supra* note 11; CEA EGAÑA, *supra* note 11; *see generally supra* note 19.

difficult problems such as river basin conflicts arise. The system tends to leave a sort of decision-making vacuum, which is typically filled by those interests with more political influence and the resources to act on their own behalf. The following two Parts illustrate this point in detail.

IV. NON-CONSUMPTIVE WATER RIGHTS: OBJECTIVES AND PROBLEMS

The 1981 Water Code's major innovation in multi-purpose water management was the creation of a new kind of property right, the "non-consumptive" water right. A non-consumptive right allows its owner to divert and use water as long as the water is returned unaltered to its original channel.[63] The goal was to encourage hydroelectric power development in the mountains and foothills of the Andes without harming the existing rights of irrigators downstream in the central valley.[64] By 1981, most of the surface water resources in northern and central Chile had already been allocated under the system of consumptive rights. By creating a new category of rights, the government aimed to intensify the use of water resources without having to compensate the owners of existing rights. It was a step toward more integrated water management and showed foresight about the growing importance of hydroelectricity.[65]

Unfortunately, that foresight was limited. The Water Code's rules about the relation between consumptive and non-consumptive rights are brief and ambiguous. Coordinating the two has been more difficult than expected and has revealed some of the Code's flaws. First, it is not clear under the Code whether either type of right has preference in case of conflict. The Code generally does not recognize priorities among different types

63. Water Code, DFL No. 1,122, art. 14 (Chile 1981).

64. The Code does not specify that non-consumptive rights are for hydroelectric power, although that was certainly their main purpose. Other industrial water uses such as cooling or processing can also be non-consumptive if they meet the conditions of article 14. So far non-consumptive rights have not been used for environmental purposes, e.g. to maintain a minimum flow. Before 1981, all rights were assumed to be consumptive, even if used for power generation, because of the predominant influence of irrigation. *See* BAUER, *supra* note 6, chap. V.

65. Creating non-consumptive rights was like the creation of "contingent" water rights (*derechos eventuales*) in the late 19th century, which have carried through to the present Code (art. 18). Contingent rights are claims to surplus waters that are occasionally available after "permanent" rights have been satisfied (the distinction is similar to that between junior and senior appropriative rights in the Western United States). The goal was to promote additional irrigation in areas where the most secure supplies were already taken. BAUER, *supra* note 6, at chap. V, n.16.

of water uses.[66] On the other hand, several provisions suggest that non-consumptive rights are subordinate to more traditional consumptive uses. The most important such provision is Article 14, which defines non-consumptive rights and requires that "the extraction or restitution of waters shall not damage the rights of third parties to the same waters, in terms of their quantity, quality, substance, opportunity of use, and other details."[67] Other articles of the Code declare that consumptive rights can be freely bought and sold without regard to the effect on non-consumptive rights, while the latter face extra restrictions on exercising rights-of-way over others' property.[68] However, even Article 14 fails to spell out any further guidelines about how non-consumptive rights can be used. Instead, the Code requires that rules be determined individually for each right when it is formally granted or acquired.

Second, the rules for decision-making within vigilance committees are biased in favor of non-consumptive rights. Vigilance committees, or *juntas de vigilancia,* are the largest water users' organizations in Chile, made up of different canal associations that take water from the same river. The committees are essentially federations of individual canals, covering part or all of a river basin. Their main function is to enforce the distribution of waters according to the rights of different canals.[69] Traditionally, the committees have been composed almost entirely of irrigators. Under the present Code, however, the owners of non-consumptive rights are members of vigilance committees as well. Important decisions within the committees are made by majority vote of the members, who cast votes in proportion to their water rights.[70] But the Code's drafters apparently failed to notice that because there is a separate right for each non-consumptive use of the same water, the non-consumptive rights will outnumber and outvote the consumptive rights in any river that has more than one hydroelectric plant.[71] In practice, the committees remain dominated by irrigators, who in self-

66. For example, the Code does not recognize priorities when new rights are granted. *See supra* notes 42 and 43, and accompanying text.

67. Water Code, DFL No. 1,122, art. 14 (Chile 1981).

68. *Id.*, arts. 15, 97. Article 97 also imposes other obligations on the owners of non-consumptive rights: in exercising a right-of-way they cannot detain the flow of water without permission from the owners of consumptive rights, they must avoid sudden surges and reductions of flow, and they cannot prevent consumptive rights-holders from modifying their own canals or closing them for maintenance.

69. Water Code, DFL No. 1,122, arts. 263–82 (Chile 1981).

70. *Id.*, arts. 222, 276.

71. The bias in voting rights seems to have been inadvertent rather than deliberate, according to off-the-record interviews with people informed about the drafting of the Water Code, although it is difficult to know. BAUER, *supra* note 6, Chap. V, text at n.19, and chap. III.

defense tend not to invite their non-consumptive members to meetings. The power companies, in turn, deny the committees' authority over them.

The conflicts between consumptive and non-consumptive rights-holders have been sharpest in the management of dams and reservoirs. Power generation and irrigation have conflicting seasonal demands for water. Power companies want to store water in the summer to supply high national electric demand in winter, while farmers want to store water in the winter for use during the summer growing season. The will to cooperate is undermined by a deeply rooted, single-use mentality about water rights. Irrigators tend to consider a river "theirs" because it has long supplied their canals, regardless of the later appearance of other water users and rights-holders. Power companies, on the other hand, which have built and paid for dams and reservoirs, take for granted their freedom to manage the works as they choose. The Water Code's ambiguity about the relationship between the two uses reflects that, when it was drafted, there was little discussion about the future privatization of the *Empresa Nacional de Electricidad* (ENDESA).[72] Before its privatization in the late 1980s, there seemed little need to take regulatory precautions because the dams were state-owned and water management was under state control. The military government did not modify the Water Code when it privatized ENDESA and the company's water rights were included among its assets.

Finally, for certain key reservoirs the rules for coordinating irrigation and hydroelectric uses were established decades before the current Water Code. In both the Maule and Bío Bío River basins, state agencies in charge of irrigation and electric power development signed formal agreements to convert a natural lake into a reservoir, which meant to cooperate in building, financing and operating the necessary storage works.[73] The agreements are still in effect and have provided some stability in river basin management, although their wider context has become much more complicated in the past decade.

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72. ENDESA is the National Electric Company. It was created in 1943 to develop a nationwide system of generating and distributing power. Since privatization, it has been one of Chile's largest and most profitable corporations. *See, e.g.*, Eduardo Bitrán & Raúl Sáez, *Privatization and Regulation in Chile*, THE CHILEAN ECONOMY: POLICY LESSONS AND CHALLENGES 329-77 (Barry P. Bosworth et al. eds., 1994); DOMINIQUE HACHETTE & ROLF LUDERS SCHWARZENBERG, LA PRIVATIZACIÓN EN CHILE (1992).

73. The agencies were the Irrigation Directorate of the Ministry of Public Works and ENDESA.

V. CASE STUDY: IRRIGATION AND HYDROELECTRICITY IN SOUTH-CENTRAL CHILE

This section focuses primarily on the Maule River basin, and secondarily on the Bío Bío River basin farther south.[74]

(1) Background

Chile relies heavily on hydroelectric power, taking advantage of favorable geographic conditions. Rain and snow fall in the Andes Mountains that run north-south for thousands of kilometers along the border with Argentina. Rivers are short and steep: they drop fast out of the mountains and foothills, where hydroelectric potential is highest, and then move west across the narrow central valley before cutting through the low coastal range to the Pacific Ocean. Hydroelectric power supplies about 75 percent of the national electric grid, the *Sistema Interconectado Central* (SIC).[75] Nonetheless, except for Lake Laja, Chile's reservoirs have little or no storage capacity from one year to the next. Most hydroelectric plants are basically run-of-the-river, called *de paso* or *de pasada.*

Two river basins in south central Chile, the Maule in Region VII and the Laja in Region VIII, have produced over half of the SIC's energy since the 1970s. The Laja River, which begins at Lake Laja, is the largest tributary of the Bío Bío. In the late 1980s, the Laja basin's three hydroelectric plants produced about 30 percent of the SIC's total power while the Maule basin's four plants produced approximately 25 percent.[76] Since then, the Maule's share has been growing. In 1991, a fifth dam, Pehuenche Dam, discussed below, raised the basin's share to 40 percent of the SIC, and by 1996 a sixth plant had come on line while two more were under construction.

The Maule River basin is the site of the country's first serious clash between irrigation and hydroelectricity. The basin is part of Chile's traditional agricultural heartland, dominating Region VII some 250 kilometers south of Santiago. The basin has about 200,000 irrigated

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74. *See* Maps 1 and 2 located at the end of this article.

75. Central Interconnected System. The SIC covers Regions III–X and serves ninety percent of the nation's population. The SIC has seventy-five percent of the total national generating capacity. The other twenty-five percent is generated on a separate grid as well as by several large mining operations in the northern desert (Regions I and II), where lack of water forces reliance on thermoelectric plants burning fossil fuels. There are also small isolated systems in the far south (Regions XI and XII). *See* COMISIÓN NACIONAL DE ENERGÍA, EL SECTOR ENERGÍA EN CHILE chap. 4 (1989).

76. COMISIÓN NACIONAL DE ENERGÍA, *supra* note 75; Rodolfo von Bennewitz, *Recursos Hidroeléctricos de la Cuenca de Bíobío,* LA REGIÓN DEL BÍOBÍO 83 (Colección Terra Nostra No.18, 1990).

hectares[77] and produces mostly staple crops and a small amount of fruit for the domestic market.[78] Most of this acreage is in the uppermost "section" of the river, which includes the foothills and most of the central valley. The section has a total of thirty-four canals and some 10,000 irrigators who are members of the Maule River Vigilance Committee.[79]

Hydroelectric development in the Maule basin began in the late 1940s, shortly before Chile passed its first Water Code.[80] The source of the Maule River is a mountain lake with the same name. In 1947, two state agencies, the Irrigation Directorate (ID) and ENDESA, signed an agreement to convert the lake into a dual-purpose storage reservoir. According to the agreement, which is still in effect, each agency has the right to a share of the lake's waters, which can be released separately as needed for different downstream uses.[81] The agencies held the water rights in state ownership until ENDESA's rights were privatized along with the company in the late 1980s. The ID manages the lake, delivering its own share free of charge to private irrigators and canal associations in the central valley. The irrigators themselves have no rights to nor control over the lake. However, they do have prior rights to water in the Maule River and its many tributaries.[82] ENDESA has the rights both to its own share of the lake and to generate power with the waters released by the ID for irrigation purposes.[83] By the mid-1960s, ENDESA had built a power-plant on the river a short distance below the lake as well as a dam with a second power-plant on one of the river's upper tributaries, the Cypress River.

Large-scale hydroelectric development began in the 1980s. In 1983, the DGA granted ENDESA the basin's first non-consumptive rights for two adjacent multi-purpose dams then being built where the river leaves the

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77. The area is equal to approximately 500,000 acres.

78. This is about fifteen percent of the nation's total irrigated area. The principal crops are grains, other annuals, and livestock pasture. COMISIÓN NACIONAL DE RIEGO, ESTUDIO INTEGRAL DE RIEGO DE LA CUENCA DEL RÍO MAULE (1977); GRUPO DE INVESTIGACIONES AGRARIAS, SÍNTESIS ESTADÍSTICA: 1991, VII REGIÓN (Informe de Coyuntura Agraria No. 3, 1992).

79. COMISIÓN NACIONAL DE RIEGO, *supra* note 78.

80. On the first Water Code, *see* citations, *supra* note 35.

81. Convenio Sobre Regulación del Río Maule, between Irrigation Department and ENDESA, signed Sept. 2, 1947, approved by Ministry of Public Works, Decreto Supremo No. 3341 (Nov. 11, 1947).

82. The distinction between water rights in lakes and water rights in the rivers that drain them is an historical peculiarity of Chilean water law. This distinction arose as an incentive to modify natural lakes in order to increase their storage capacity, by granting rights to the waters thereby made available. In hydrological terms, it makes little sense to consider a river separate from the lake that gives it birth, and the coexistence of both rights adds to the confusion of the situation today. BAUER, *supra* note 6, chap. V, at n.38.

83. *See* Convenio, *supra* note 81.

Andean foothills. The dams are called Colbún and Machicura. Colbún is the larger reservoir; Machicura is immediately downstream.[84] Use of the new rights was required to avoid harming any existing consumptive rights, as distributed and enforced by the river's vigilance committee. The grant defined a month-by-month schedule of guaranteed minimum flows for the rights-holders below the dams, flows which are highest during the summer irrigating season. Since completion in 1985, the two reservoirs have been operated jointly, with Machicura helping regulate the discharge to irrigators below. ENDESA also built or modified the canal-works needed to deliver water to irrigators affected by the project.[85] In 1984, the government granted ENDESA additional non-consumptive rights in the upper Maule River and in its main tributary, the Melado, for the future Pehuenche Dam. ENDESA planned to locate the Pehuenche Dam on the Melado just before the two rivers' confluence, some thirty kilometers upstream from Colbún.[86] In both cases, the rights granted to ENDESA also declared the company to be a member of the Maule River Vigilance Committee.[87]

When the military government privatized ENDESA in the late-1980s, it made the Colbún-Machicura Dams a separate company ("Colbún"), which remained in state ownership. The goal was to prevent ENDESA's monopoly of the electric sector. The Pehuenche Dam, however, was made a separate company but was bought almost immediately by the newly-privatized ENDESA, to become a wholly-owned subsidiary.[88]

Colbún was originally planned for both irrigation and power development.[89] It was designed to include a large new canal to carry water

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84. The water rights for Colbún and Machicura were granted by DGA Res. No. 105 (Apr. 19, 1983).

85. Colbún-Machicura had been studied as a regional development project since the 1960s, under the Chile-California Program of international aid and cooperation. *See* JONATHAN W. BULKLEY & RONALD T. MCLAUGHLIN, SIMULATION OF POLITICAL INTERACTION IN MULTIPLE-PURPOSE RIVER-BASIN DEVELOPMENT (Mass. Inst. of Tech. Dep't of Civil Engineering, Hydrodynamics Lab. Rep. No. 100, 1966); Esteban Doña Martínez & Ricardo Espinoza, *Análisis Histórico del Proyecto Canal Tronco Linares*, *in* SEGUNDA CONVENCIÓN NACIONAL DE REGANTES DE CHILE 303 (1989).

86. The rights for Pehuenche were awarded by special Presidential decree, which avoided the auction that the Water Code would otherwise have required, since two canal organizations had simultaneously applied for the same rights for a couple of smaller hydroelectric projects. Ministry of Public Works, Decreto Supremo No. 312 (Oct. 10, 1984). Article 148 of the Water Code gives the President authority to bypass an auction and allocate rights directly when it is justified by "exceptional circumstances and the general interest." The DGA, the National Energy Commission, and the Governor of Region VII all recommended that the President grant the rights to ENDESA. Dirección General de Aguas, Orden No.748 (Sept. 12, 1984).

87. *See* Decreto Supremo No. 312, *supra* note 86; DGA Res. *supra* note 84.

88. *See generally supra* note 72.

89. For historical background, *see generally supra* note 85.

nearly one hundred kilometers to the south, to supply water to much of the Province of Linares. However, the Canal Linares was never built and Colbún's management has been dominated by power generation, largely because, when the twin dams were built in the early 1980s, ENDESA had money to contribute while the ID did not. The military government refused to finance big new irrigation projects, considering them a classic example of state inefficiency.[90] Electric power development, on the other hand, was well funded. Therefore, ENDESA paid for the dams and assumed the right to run them as it saw fit, as long as it released the required minimum flows to irrigators. When Colbún was made a separate public company, its water rights and obligations remained the same. The present Concertación government has aimed to partially privatize Colbún beginning in late 1996, intending the new owners to compete with ENDESA.

(2) Conflict and stalemate in the Maule River basin, 1990-1992

Before 1990, there was relatively little friction between the two competing water users, although irrigators objected to some provisions in the DGA decree granting Colbún's rights. In particular, they protested that the monthly definition of minimum flows restricted their access to water during the summer months.[91] More serious problems arose when ENDESA finished the Pehuenche Dam in late 1990. In addition to blocking the flow of the Melado, Pehuenche Dam also diverts water from the upper Maule into its reservoir. After passing through the turbines, the combined water is released back into the Maule kilometers downstream. Pehuenche Dam has approximately the same generating capacity as Colbún, though much less reservoir storage.[92]

Pehuenche's construction was finished in November 1990, during the third consecutive year of drought in central Chile. November is early summer in Chile and regional tensions about water scarcity were high. The company closed the dam's gates in order to fill the empty reservoir so that it could start generating power several months later as required by its contract with the national electric grid. Irrigators downstream suddenly found much of their water cut off just as the growing season moved into its hottest and driest months. The irrigators protested to the Maule River

90. On the military government's irrigation policies, *see generally supra* note 45; Bauer, *supra* note 5; BAUER, *supra* note 6, chaps. III and IV.

91. *See* García Huidobro Valdés y Otros con Colbún-Machicura (Ct. App. Talca 1989) (unpublished) (on file with author); Ramírez San Cristóbal con Colbún-Machicura (Ct. App. Talca 1989) (unpublished) (on file with author). *See* DGA Res., *supra* note 84.

92. The following account will often refer to Pehuenche because the company that owns and runs the dam is legally distinct; but ENDESA is the real owner and decision-maker. *See supra* note 88 and accompanying text.

Vigilance Committee, which asked Pehuenche to let the water flow by the dam.[93] When the company refused, the Committee went to court.

The Vigilance Committee filed a *recurso de protección* against the Pehuenche Electric Company in the appellate court in Santiago.[94] The Committee argued that Pehuenche was violating the irrigators' property rights by detaining the river-flow. Moreover, the Committee asserted that the power company was treating non-consumptive rights as if they were consumptive by storing the water, thereby making it unavailable downstream. According to the Committee's argument, the company should either wait until autumn to fill the reservoir, or buy the necessary rights from Colbún. Because Colbún is downstream, such a deal would mean that Colbún would release its own water to the irrigators, allowing Pehuenche to accumulate the flows upstream. (Recall that the Colbún-Machicura Electric Company was still state-owned, and that the Concertación was now the government).

At first, both the appellate court and the supreme court ruled in favor of the irrigators.[95] The courts ordered Pehuenche to let enough water pass to meet the irrigators' needs. However, the two decisions had key differences. The appellate court reasoned at some length that non-consumptive rights were subordinate to consumptive rights when the two came into conflict, but said nothing about what Pehuenche's other options might be.[96] The supreme court, on the other hand, removed all discussion of the priority of consumptive rights from the appellate court's decision, and stated only that in this particular case the irrigators' property was threatened. The court then referred the substantive conflict to the DGA to resolve, despite the agency's limited powers to do so.[97]

Several days later, in the height of summer, the DGA followed the supreme court's lead and ordered Pehuenche to open its reservoir gates.[98] The next day, the DGA approved a deal between Pehuenche and ENDESA

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93. Recall that Pehuenche's water rights made it a member of the Vigilance Committee, *supra* note 87 and accompanying text.

94. Junta de Vigilancia del Río Maule con Empresa Eléctrica Pehuenche (Ct. App. Santiago 1990; Sup. Ct. 1991), 2 REVISTA DE DERECHO DE MINAS & AGUAS 321 (1991).

95. *Id.*

96. *See* discussion *supra*, part IV. Chilean water law scholar Alejandro Vergara criticized the Appellate Court of Santiago's reasoning, arguing that the Code has no preference. Alejandro Vergara, Informe Constitucional No. 48 (1991).

97. The supreme court's deference to the agency was based on two rarely used provisions in the Water Code. The first authorizes the DGA to settle problems caused when water projects alter stream-flows. Water Code, DFL No. 1,122, art. 303 (Chile 1981). The second gives the DGA temporary power to redistribute waters during officially declared drought emergencies. Water Code, DFL No. 1,122, art. 314 (Chile 1981). Article 303 has not been construed as granting the DGA adjudicatory powers.

98. DGA Res. No. 36 (Jan. 28, 1991).

to fill the reservoir with waters released from ENDESA's shares in the two upstream reservoirs, especially Lake Maule.[99] A week later, Pehuenche also agreed to pay Colbún to release water temporarily to the irrigators while the new reservoir filled. The ID facilitated the transfer by releasing some of its own reserve in Lake Maule, in part to relieve the irrigators and in part as a loan to ENDESA, which the company would repay out of its share of Lake Maule in the following year. The Vigilance Committee opposed the transfer and appealed the DGA's decision.[100] The Committee argued that ENDESA's rights in the upper reservoirs were non-consumptive by nature, and therefore could not be used to fill a reservoir, which was a consumptive use. The DGA rejected the argument and criticized the irrigators for protesting the transfer even though they were not injured by it and had no rights to the lake in any case.[101]

Meanwhile, through its Pehuenche subsidiary, ENDESA continued to challenge the DGA's initial order to open the reservoir gates.[102] ENDESA outlined what would be its legal position in the future. The power company argued that the Water Code established no priority between consumptive and non-consumptive rights. Therefore, the DGA's actions protecting irrigators undermined the property of power companies. ENDESA further declared that non-consumptive rights must implicitly include the rights to fill reservoirs and to regulate water-flow; any other interpretation of the Code's language would defeat the whole purpose of hydroelectric development.[103] The DGA flatly rejected ENDESA's position, stating that the Code clearly required non-consumptive rights to work around pre-existing consumptive rights.[104]

The suits brought by ENDESA and the Vigilance Committee against the DGA[105] were consolidated and decided together, but the first round of

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99. DGA Res. No. 38 (Jan. 29, 1991), 2 REVISTA DE DERECHO DE MINAS & AGUAS 330 (1991). As ENDESA's subsidiary, Pehuenche apparently paid nothing in exchange. BAUER, *supra* note 6, chap. V.

100. Maule River Vigilance Comm., appeal for administrative reconsideration (Feb. 15, 1991) (unpublished) (on file with author).

101. DGA, Report to Ct. App. Santiago (Feb. 20, 1991), 2 REVISTA DE DERECHO DE MINAS & AGUAS 332 (1991). Both the ID and the DGA are in the Ministry of Public Works. The Minister's control of the lake via the ID was his main leverage over the parties in the dispute. Interview with Carlos Hurtado, former Minister of Public Works, in Santiago, Chile (Dec. 6, 1995).

102. *See* DGA Res., *supra* note 98.

103. Pehuenche Electric Company, appeal for administrative reconsideration (Feb. 21, 1991) (unpublished), appeal for judicial review (Mar. 19, 1991) (unpublished) (on file with author).

104. DGA, Report to the Controller General (Mar. 6, 1991) (unpublished) (on file with author).

105. *See supra* notes 100; 103.

conflict ended in stalemate, with the advantage to ENDESA. In March 1991, the appellate court ruled once again that the irrigators' rights were being violated, and ordered compliance with the decisions made in December and January.[106] In April, the supreme court set aside the ruling, but chose to avoid deciding the substantive issues.[107] By then, the harvest was over and the rainy season was near. The supreme court convinced the private parties involved—ENDESA, Pehuenche, and the Vigilance Committee—to agree to a settlement dropping their suits without resolution of the issues. All sides retained the right to argue the same positions in the future. In fact, they would do so within the year. The Vigilance Committee in particular accepted the settlement only because in practice it was too late; the Pehuenche reservoir was already full.[108]

The next summer, the conflict intensified even though the drought had ended during the intervening winter and the reservoirs were full. The issue turned to Pehuenche's routine operation of accumulating water at night and releasing it during the day, when electric demand was highest. Although the reservoir's storage capacity is fairly small, it can regulate flows on a short-term basis. Through the Vigilance Committee, the irrigators protested the frequent and unpredictable changes in the flow reaching their canals. The head of the DGA's regional office responded by ordering Pehuenche to respect the "opportunity of use" of consumptive rights by stopping all regulation and storage of the flow and operating as a strictly run-of-the-river power-plant.[109]

ENDESA promptly sued the DGA for violating its property rights.[110] The power company denied the DGA's authority to regulate its water use, arguing that it was up to private rights-holders to take legal action if they were injured. The company insisted, as it had the previous summer, that non-consumptive rights should not be defined so rigidly as to prohibit any alteration of flow. Some degree of temporary storage, the company argued, was essential to electric power development. In ENDESA's view, the irrigators' rights were not harmed by brief delays in

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106. *See supra* note 94.

107. Junta de Vigilancia con DGA (Ct. App. Santiago 1991; Sup. Ct. 1991), 2 REVISTA DE DERECHO DE MINAS & AGUAS 327 (1991). The Appellate Court of Santiago's decision is criticized for several procedural flaws by Alejandro Vergara, Informe Constitucional No. 74 (1991).

108. *See* Junta de Vigilancia con DGA, *supra* note 107. For the view that the Maule conflict shows that the Water Code should be reformed to clarify the superiority of consumptive rights, see the interview with lawyer Mario Silva in REVISTA TATTERSALL No. 70, at 8 (1991).

109. DGA/Región VII, Orden No. 716 (Dec. 11, 1991). The phrase "opportunity of use" comes from Water Code, DFL 1,122, art. 14 (Chile 1981), quoted *supra* note 67.

110. Pehuenche Electric Company, *recurso de protección* (Ct. App. Talca Dec. 27, 1991) (unpublished) (on file with author).

water delivery. In a rather forced interpretation, the company argued that where the Water Code prohibited non-consumptive rights from interfering with other rights' "opportunity of use," the true intent was to favor the technical needs of power generation, not irrigation.[111]

Farmers and the DGA were not ENDESA's only opponents in this round of the conflict. In January 1992, Colbún protested as well, since it was in effect paying for the Pehuenche Dam's plan of operations. Because Colbún is legally obligated to release certain minimum flows to the irrigators, it must moderate the fluctuations caused upstream by the Pehuenche Dam. In other words, because ENDESA managed the flow at its convenience to generate power when electric prices were highest, Colbún lost money by having to generate in off-peak periods. At one point, Colbún briefly cut off some of its releases and blamed the Pehuenche Dam in order to increase the irrigators' pressure on its rival.[112] Soon after, the members of the Vigilance Committee voted unanimously to ask Pehuenche to suspend operations, as usual to no avail.[113]

The DGA agreed with ENDESA that the agency lacked authority to order changes in water use. However, the agency rejected the company's other arguments. The water rights for Pehuenche had been granted on condition that they not interfere with others' pre-existing rights; in this case they were clearly interfering. The grant said nothing explicit about the power to regulate or store water-flow. The DGA denied that such powers were implicit in non-consumptive rights since the Water Code neither recognizes nor requires specific uses for water rights. The DGA's position was firm: Pehuenche had no rights to alter the flow at all. According to the DGA, the company's only legal option was to negotiate a solution with other rights-holders.[114]

Throughout the dispute, the DGA's firmness was undermined by pressures not to complicate electric power generation, which as a key component of economic growth was a high governmental priority. Both the National Energy Commission and the agency that manages the national electric grid told the DGA that Pehuenche's operation should not be tightly restricted because its production was so vital to increasing energy supplies; without it, either electricity prices would rise or rationing would become

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111. *Id.*

112. Letter from Alvaro González, General Manager, Colbún-Machicura Electric Company to Santiago Letelier, President, Maule River Vigilance Committee (Jan. 14, 1992) (on file with author); letter from Jorge Bachmann, President, Maule Sur Canal Association to Gustavo Manríquez, Director, DGA (Jan. 21, 1992) (on file with author).

113. *Acusan a Pehuenche por Mal Uso de Aguas*, EL MERCURIO, Jan. 22, 1992.

114. DGA, brief (Ct. App. Talca 1992) (unpublished) (on file with author). *See also* letter from Gustavo Manríquez, Director, DGA to Ernesto Silva, General Manager, Pehuenche Electric Co. (Jan. 6, 1992) (on file with author).

necessary. The two energy agencies believed that injuries to irrigators could be readily prevented by coordinating Pehuenche's operation with Colbún's.[115]

Taking its cue from the supreme court, the Appellate Court of Talca also refused to address the substance of the issues. Instead, in January 1992, it insisted that Pehuenche and the irrigators choose a pair of expert arbiters to negotiate an agreement.[116] At the same time, Pehuenche and Colbún reached a temporary compromise in which Pehuenche agreed to moderate restrictions. A nationally prominent senior lawyer and law professor, Alejandro Silva Bascuñán, was named chief arbiter. However, with the end of the drought, the process again slowed to a crawl. More than four years later it remained unresolved. In the meantime, the most important event in multiple water use was the court battle over the first dam on the Bío Bío River, the Pangue project.

(3) Multiple use conflicts in the Bío Bío River basin

The Bío Bío River is one of the largest and most economically important rivers in Chile. It dominates Region VIII, 250 kilometers south of the Maule, and supplies four major water uses: irrigation, hydroelectricity, a variety of industries, and urban consumption. Urban consumption is particularly heavy in Concepción, the regional capital located at the river's mouth.[117] Since the 1960s, the lower Bío Bío has suffered serious urban and industrial pollution. The basin has a more complex history of multiple-use water problems than other Chilean rivers, partly because of its larger size. Unlike the Maule, however, the Bío Bío has no vigilance committee.[118]

While the Bío Bío's main stem was not dammed until the mid-1990s, its northernmost tributary, the Laja River, was the country's biggest hydroelectric producer for years.[119] Like the Maule, the Laja River begins at a mountain lake which was converted to a reservoir by ENDESA and the ID

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115. Letter from Sergio Lorenzini, Executive Secretary, Nat'l Energy Comm'n to DGA (Feb. 1, 1991) (on file with author); letter from Germán Guerrero, President, Centro de Despacho Económico de Carga, to DGA (Dec. 20, 1991) (on file with author).

116. Res. (Ct. App. Talca Jan. 29, 1992) (on file with author).

117. With over 700,000 people, the Concepción metropolitan area is the second largest in Chile, after Santiago. INTENDENCIA DE LA REGIÓN DEL BÍO BÍO, ESTRATEGIA PARA EL DESARROLLO REGIONAL: LA REGIÓN DEL BÍO BÍO AL ENCUENTRO DEL SIGLO XXI 14 (1991).

118. The basin has about 175,000 irrigated hectares. For more detailed discussion of the Bío Bío basin, see BAUER, *supra* note 6, chap. V. *See also* FRANCESCO FARANDA ET AL., SÍNTESIS DEL PROGRAMA EULA (1993); USO DEL SUELO Y MANEJO DE LOS RECURSOS HÍDRICOS EN LA CUENCA DEL BÍO-BÍO (Francesco Faranda & Oscar O. Parra eds., 1992); CAMILO MURCIA, ORIGEN, USO Y PERSPECTIVAS DEL RÍO BÍO BÍO (1988); CAMILO MURCIA, USO, MANEJO Y DESARROLLO DE LA HOYA HIDROGRÁFICA DEL RÍO BÍO-BÍO (1988); Von Bennewitz, *supra* note 76.

119. *See supra* note 76.

as a result of a 1958 agreement. The agreement still controls the rules of operation.[120] Unlike the Maule, Lake Laja is run by ENDESA and is the only reservoir in Chile big enough to provide multi-year storage. Such storage is critical because Chile is heavily dependent on hydroelectricity, making the lake the "reserve battery" of the entire national power grid. For example, ENDESA drew heavily on Lake Laja during the drought of 1988-91.[121] The lake's strategic importance is further reflected in national electric rates, which since the early 1980s have been calculated by a model based on the lake's marginal costs of operation.[122]

A. The Laja River Example

This article describes two of the most important multiple water use conflicts in the Bío Bío basin. Both illustrate the combination of administrative and judicial formalism that characterizes the Chilean legal system. In the first case, the conflict began in 1984 when two forest industries simultaneously applied for new consumptive water rights in the Laja River. Both companies planned identical projects to transfer the water northward out of the basin to a future hydroelectric plant on the Itata River.[123] When there is not enough water to satisfy simultaneous applications, the Water Code directs the DGA to hold an auction for the available rights.[124] The proposed transfer was strongly opposed by downstream water users in the Bío Bío basin and by some government agencies. Opponents protested that it would dry up the famous Salto del Laja waterfall and increase the concentration of pollution in the lower Bío Bío. In November 1985, the DGA decided to hold the auction anyway. Several interest groups in Concepción responded by filing a *recurso de protección* claiming that the auction violated their constitutional right "to live in an environment free of contamination."[125]

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120. Convenio Sobre Regulación del Río Laja, between Irrigation Directorate and ENDESA, signed Oct. 24, 1958, approved by Ministry of Public Works, Decreto Supremo No. 2534 (Oct. 29, 1958).

121. Enrique Márquez, *El Proyecto Laja-Diguillín*, Faranda & Parra eds., *supra* note 118, at 67-70. Colbún, in contrast, although one of Chile's largest reservoirs, can store only 20-25% of the Maule's annual flow. Interview with Jorge Gálvez, Engineer, Irrigation Directorate, Santiago, Chile (Apr. 19, 1993).

122. COMISIÓN NACIONAL DE ENERGÍA, *supra* note 75.

123. The projects are described in Soto con Director General de Aguas (Ct. App. Santiago 1986; Sup. Ct. 1986), 334 FALLOS DEL MES 584 (1986).

124. *See generally supra* note 43, and accompanying text.

125. This environmental right can be defended by a weaker *recurso de protección*, as discussed *supra* note 23. In light of the environmental *recurso*'s added restrictions, it is not clear why the plaintiffs chose not to assert stronger constitutional rights as well.

The DGA responded to the *recurso* by stating that, although it recognized the problem and had tightened conditions on the new rights, it had no regulatory power over pollution control. That authority belonged instead to the National Health Service and to municipal governments. As a result, the DGA argued that it was required to auction the rights even in the face of declining water quality. Six months later, both the Appellate Court of Santiago and the supreme court rejected the *recurso* and fully supported the DGA's position.[126] The courts ruled that the DGA's actions in keeping strictly to the letter of the law had been neither "arbitrary" nor "illegal," and that since there were no procedural errors the judges were not required to probe the substantive constitutional issues. In practice, the suit served the plaintiffs' purpose by buying them time to negotiate a political solution. The Minister of Public Works intervened and eventually the two forest companies abandoned their projects in the interests of good public relations.[127] However, it was a troubling sign of how administrative formalism could combine with judicial formalism to sidestep a tough problem.[128]

B. Pangue Dam Example

The second case concerned the Pangue Dam on the upper Bío Bío, the river with the country's greatest hydroelectric potential. ENDESA began studying the river's potential in the 1950s and eventually identified six possible projects.[129] The projects would double the nation's total 1990 generating capacity. Pangue is the first of the projects to be built, beginning

126. *See* Soto con Director General de Aguas (Ct. App. Santiago 1986; Sup. Ct. 1986), 334 FALLOS DEL MES 584 (1986).

127. The attempted auction triggered several years of regional efforts to better coordinate basinwide water management, mostly unsuccessful. In the 1990s very similar problems have arisen with another inter-basin transfer, the Irrigation Directorate's "Laja-Diguillín" canal project. *See* BAUER, *supra* note 6, chap. V.

128. The following year the DGA and the appellate court of Santiago reached a similarly formalistic decision in another inter-basin transfer case. A mining company bought agricultural land with water rights in the upper Aconcagua River Valley in order to transfer the water to the upper basin of the Mapocho River for industrial purposes. When the DGA approved the transfer, it was sued by a hydroelectric company and by the Aconcagua River Vigilance Committee, both downstream in the Aconcagua Valley. They claimed injury, arguing that the rights in question should be reclassified from consumptive to non-consumptive in view of their importance downstream. The DGA replied that it had no power to do so, nor could it restrict the mining company's use of its rights unless there were third-party damages (apparently ignoring the plaintiffs' claims). The Appellate Court of Santiago ruled for the DGA, asserting somewhat inconsistently that only the ordinary civil courts could adjudicate such a conflict, but refusing to investigate the matter. *See* Generadora Eléctrica Sauce-Los Andes con DGA (Ct. App. Santiago 1987), 83 GACETA JURÍDICA 67 (1987).

129. *See* Von Bennewitz, *supra* note 76.

in the early 1990s.[130] Although the reservoir is fairly small, basically a run-of-the-river operation, its environmental and cultural impacts have sparked national and international controversy. The World Bank was one of the project's major supporters, lending money through the International Finance Corporation, the Bank's arm for lending to the private sector.[131] The project exposed an isolated area to development. The area contains unique ecosystems and is inhabited by several thousand indigenous people known as Pehuenche (no relation to the dam of the same name). Within Chile, Pangue was also symbolic as the first major environmental dispute under the more open political conditions of the newly elected government of the Concertación. Many environmentalists hoped that the new government would be more sympathetic to their concerns than the military had been.

On the whole, however, the Concertación government has supported the dam, echoing many of the arguments made by ENDESA. According to the project's proponents, the country's rapid economic growth continues to increase the demand for electricity, and hydroelectric power reduces the import of fossil fuels and is non-polluting, although it has other environmental impacts. In addition, the government wants to encourage private capital investment in infrastructure of all kinds.[132] ENDESA itself has argued that its opponents have exaggerated the dam's negative impacts and ignored the company's efforts to mitigate those impacts. The company voluntarily commissioned two environmental impact assessments, even though it was not required by law to do so. The first assessment recommended more study before going ahead with the project; the second assessment was more favorable. The debate in Chile has been extremely polarized, with many of Pangue's critics describing the project as a total catastrophe while ENDESA has denied or discounted nearly all environmental concerns.[133]

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130. Like the Pehuenche Dam, Pangue Electric Company is a subsidiary of ENDESA. *See* citations *infra* note 133.

131. *See, e.g.*, GRUPO DE ACCIÓN POR EL BÍO BÍO, EL PROYECTO HIDROELÉCTRICO DEL ALTO BÍO BÍO: UNA AMENAZA PARA EL MEDIO AMBIENTE Y EL PUEBLO MAPUCHE-PEHUENCHE DE CHILE (Documento de Trabajo 1992). The GABB has been the principal Chilean organization coordinating the opposition to Pangue. The International Rivers Network, based in Berkeley, California, has played a key role outside the country. For a more detailed discussion of the Pangue controversy, *see* BAUER, *supra* note 6, chap. V.

132. *See* MIDEPLAN, División de Planificación Regional, Informe Económico Social y Ambiental del Proyecto Pangue (1992) (unpublished report, on file with author).

133. For arguments in favor of Pangue, see Carlos Maturana, *El Desarrollo Hidroeléctrico del Alto Bío Bío y los Estudios del Medio Ambiente*, in MURCIA, USO, Manejo Y Desarollo *supra* note 118, at 73; PANGUE ELECTRIC COMPANY, ENVIRONMENTAL DESCRIPTION OF THE PANGUE PROJECT (1991); Von Bennewitz, *supra* note 76. The first environmental impact study was done by the Universidad de Concepción. *See* Universidad de Concepción, Estudio Preliminar para la Evaluación del Impacto Ambiental del Sistema de Centrales Hidroeléctricas del Alto

For the purposes of this article, the most important aspect of the dispute was the legal conflict over the dam's effects on downstream flows and water rights. In 1993, the coalition of environmental and indigenous organizations opposing the dam, represented by Chile's most famous environmental lawyer, Fernando Dougnac,[134] filed a *recurso de protección* against ENDESA.[135] They claimed that the Pangue Dam violated their constitutional rights to live in a clean environment, in part because the dam's storage of water would reduce downstream flow and increase the concentration of pollutants. A group of irrigators with consumptive water rights also joined the plaintiffs. This gave the suit more legal weight by adding property rights claims to the environmental arguments.[136] The irrigators feared that Pangue's operation would expose them to alternating low water levels and sudden surges, over which they would have neither control nor advance information. Dougnac elaborated on the arguments the DGA and the Vigilance Committee had made earlier in the Maule River conflict: the only reasonable interpretation of the Water Code was that non-consumptive rights had to work around prior consumptive rights, not vice versa. ENDESA could not alter the flow at all without the irrigators' consent, and certainly could not store and release it at will. In its defense, ENDESA repeated its position in the Maule case that non-consumptive rights must include temporary storage and flow regulation, and that this does not significantly harm consumptive rights-holders or the environment. Even when the flow was cut off at Pangue, the dry channel would begin to recharge several kilometers below the dam from groundwater and other tributaries. The company argued that the project's impact had been exaggerated.[137]

In June 1993, just as its counterpart in Santiago had done when first confronted with the problem, the Appellate Court of Concepción ruled against ENDESA. The court interpreted the Code to mean that non-

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Bío Bío, Convenio ENDESA/Universidad de Concepción (1988) (unpublished) (on file with author). For a critique of the second study, see Centro EULA, Análisis del Informe de "Evaluación de Impactos Ambientales del Proyecto Pangue" Realizado para Pangue S.A. por Ecology & Environment, Inc. & Agrotec Ltda. (1992) (unpublished) (on file with author); Grupo de Acción por el Bío Bío, *supra* note 131.

134. Dougnac had won what was probably Chile's most famous environmental case in 1985, blocking an irrigation project that would have partly drained Lake Chungará in a National Park in northeastern Chile. Palza y otros (CODEFF) con Dirección de Riego y Ministerio de Obras Públicas (Ct. App. Arica 1985; Sup. Ct. 1985), 66 GACETA JURÍDICA 21 (1986).

135. Orrego con Empresa Eléctrica Pangue (Ct. App. Concepción 1993; Sup. Ct. 1993), 158 GACETA JURÍDICA 52 (1993).

136. On the difference between environmental *recursos* and other *recursos*, see *supra* note 23.

137. *See supra* note 135.

consumptive rights did not include flow regulation if it injured consumptive rights. The court also held that the DGA's grant of water rights for Pangue explicitly required a minimum flow and prohibited sudden surges, conditions that the dam's plan of operation seemed likely to violate. As a result, the court ordered ENDESA to halt construction until it had either modified the plan or reached a compromise with the affected water rights owners.[138] The victory for the dam's opponents highlighted the tension underlying their alliance. While the environmentalists wanted to block the dam entirely, irrigators and other water users might be satisfied with a compromise whereby ENDESA agreed to pay compensation and obey certain rules of reservoir management.

The appellate court's decision triggered six weeks of heated national debate before it was reversed by the supreme court. For the first time, the supreme court abandoned its protection of the property rights of consumptive users, and ruled on the substantive issues. It fully accepted ENDESA's arguments in favor of non-consumptive rights, and dismissed the plaintiffs' claims as exaggerated and premature. In part, the court relied on a DGA report in which the agency reversed its position in the Maule case. The report said that the Pangue reservoir did not threaten downstream water rights, although its operation should be monitored in case of problems in the future. Therefore, the court allowed ENDESA to proceed with Pangue's construction, and said that any injured parties could sue later, after the injuries had occurred.[139]

Under other circumstances, the supreme court's apparent lack of formalism might be a welcome sign. The extreme positions of the different parties seem to call for a compromise since neither kind of water right can reasonably be given complete supremacy over the other. Hydroelectric development has important benefits that would be severely limited by prohibiting all regulation of river flow. Nonetheless, such development should have some obligations to other water users and should include real consideration of environmental protection and energy conservation. Similarly, while irrigators must live with growing demands and interference by newer water users, they should not have to bear the burden of adjustment alone. However, although the court flirts with substance, its decision is ultimately formalistic. Its decision rests on the essentially procedural grounds that no immediate injury is threatened, even though future problems are easy to foresee. The court's decision also takes a narrow and superficial approach to policy by defining one kind of property right in isolation from others, and by dismissing environmental concerns.

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138. *Id.*

139. *Id.* The DGA's report is discussed in the supreme court's decision.

By accepting ENDESA's winner-take-all interpretation of the law, the supreme court abruptly announced significant limitations on the vested property rights of consumptive water users, without requiring non-consumptive users to concede anything in exchange or even to agree to any restrictions in the future. The Pangue decision resulted in a major transfer of wealth from farmers and the agricultural sector to the power companies: a political decision with significant distributional consequences. One Chilean law professor has pointed out, partly tongue-in-cheek, that this was the supreme court's first decision using law-and-economics since it ruled in favor of the most economically valuable resource use.[140] However, the court's move was too simplistic. It missed a vital opportunity to promote a balanced compromise with broader legitimacy among water users or to call for new legislation to clarify the situation. Moreover, the court left the conflict and the bad will between the parties to fester. In October 1996, the Pangue reservoir was filled and downstream rights-holders still did not know, or have any control over, its plan of operations.[141] The coordination problem will only get worse when ENDESA builds a second dam upstream, called Ralco, which will have a much larger reservoir and storage capacity. Environmental issues and the situation with the Pehuenche Indians remain pending, recently forcing the World Bank to withdraw its support for ENDESA.[142]

(4) Continuing development and stalemate in the Maule River basin, 1993-95

The supreme court's Pangue decision was soon repeated in the Maule River conflict. Despite the arbitration process under way since 1992, the exchange of lawsuits has continued, with the irrigators generally losing but refusing to give up. They continue to challenge DGA Resolution No.105, which limited the irrigators' previous rights to the river's entire flow by specifying the minimum flows that Colbún had to release each month.[143] While irrigators have benefited from Colbún's more secure water supplies, they are also bound to its calendar: they cannot extend their irrigating season to meet the different water needs of the new export crops that many would like to introduce. They also have protested their loss of operational control over the infrastructure for water delivery. True to form, in May 1992, the Appellate Court of Santiago rejected such a challenge by one of the Maule canal associations, on the procedural ground that the organization

140. Interview with Pablo Ruíz-Tagle, Law Professor, University of Chile Law School, Santiago, Chile (Nov. 25, 1995).

141. In theory, Pangue has agreed to maintain a "minimum ecological flow" at a level that the company itself established according to its own criteria. Telephone Interview with Gonzalo Benavente, Engineer, Pangue Electric Co. (Dec. 13, 1995).

142. *See* citations, *infra* note 167.

143. DGA Res., *supra* note 84.

had no standing to sue on behalf of its members without their explicit agreement.[144] A year later, the Maule River Vigilance Committee lost a similar case protesting against the ID's management of Lake Maule. The Appellate Court of Talca found that the ID had complied with the 1947 agreement and confirmed that the irrigators had no claim to the lake in any case.[145]

Two months after the Pangue decision, the appellate courts of both Santiago and Talca used the supreme court's ruling to settle cases involving the original clashes over Pehuenche Dam in 1991. The Santiago court referred to Pangue in dismissing renewed suits against the DGA by ENDESA, through its Pehuenche subsidiary, and by the Maule River Vigilance Committee. In opposite ways, each suit protested the agency's actions during the reservoir's initial filling.[146] Similarly, the Talca court ruled squarely for Pehuenche in a suit against the DGA's December 1991 order to stop altering flows. Both Colbún-Machicura Electric Co. and the Vigilance Committee joined the DGA in arguing for some restrictions on non-consumptive rights; however, the court denied the DGA's power to intervene and invoked the Pangue rule allowing temporary interruption and storage of flow. Again, the court refused to offer any further guidance as to how to balance the conflicting rights. Instead, it left the problem to the arbiters and said that injured parties could sue later if necessary.[147]

Meanwhile, the arbitration process has moved slowly and has narrowed in scope. Both the Vigilance Committee and the DGA withdrew from the process after 1992 as negotiations came to focus solely on the relationship between the Pehuenche and Colbún-Machicura Dams. Presently, the two power companies agree that Pehuenche has the right to alter the river-flow, but disagree about Colbún's claim that it should be compensated for moderating the impact on irrigators. In spite of the legal uncertainty, both companies have been building new, medium-size, run-of-the-river power plants, scheduled to come on line in 1995-97. Colbún has added one plant below the Machicura reservoir before the reservoir's outflow returns to the river. ENDESA has added two more plants on the

144. Asociación de Canalistas del Maule con DGA (Ct. App. Santiago 1992), 89 REVISTA DE DERECHO & JURISPRUDENCIA 65 (1992). Two years later the supreme court confirmed, without explanation (Nov. 28, 1994) (unpublished) (on file with author).

145. Junta de Vigilancia del Río Maule con Dirección de Riego/Región VII (Ct. App. Talca 1993), 4 REVISTA DE DERECHO DE AGUAS 250 (1993).

146. Pehuenche con DGA (Ct. App. Santiago 1993) (unpublished) (on file with author); Junta de Vigilancia del Río Maule con DGA (Ct. App. Santiago 1993), 90 REVISTA DE DERECHO & JURISPRUDENCIA 161 (1993). *See* DGA Resolutions, *supra* notes 98 and 99.

147. Pehuenche con DGA/Región VII (Ct. App. Talca 1993) (unpublished) (on file with author). A dissenting opinion, highly unusual in water cases, argued that the Water Code was too vague, that third-party injuries were too likely, and that the whole problem was too complex for a quick procedure like the *recurso de protección*. *Id. See* DGA Order, *supra* note 109.

Maule River, upstream from the Pehuenche reservoir, called Loma Alta and Curillinque. The basin now contains a total of eight hydroelectric plants. Nonetheless, there is still no agreement, either between the power companies or involving the irrigators, about how they are all to be coordinated.[148]

In short, water rights in the Maule basin are uncertain and conflict in several ways. The ID and private irrigation groups worry that the region's agricultural development has stagnated because of confusion over water rights titles and because of the growing dominance of hydroelectric power.[149] Those two factors have helped prevent an active local water market: there are more paper rights than "wet water," the scope of consumptive rights is in doubt, and the hydroelectric infrastructure limits the possibilities for redistributing water.[150] Part of the ID's motivation in sorting out these problems is to find enough water to supply the proposed Canal Linares southward from Colbún, which it still hopes to build.[151] Meanwhile, the DGA has implemented its own program to regularize water titles, following criteria that are more generous than those used by its sister agency.[152]

Among different power companies, the rules for coordinating dams are still unclear. The companies seem to expect problems to be handled through the regulatory framework of the electric sector rather than the Water Code or the DGA. However, regulations governing the generation an transmission of power were not designed to account for other water uses. In addition, Chile's electric laws and regulations have been criticized for allowing excessive monopoly power and concentration, making them and untrustworthy guide for river basin management.[153] Finally, the conflict between irrigation and hydroelectricity continues unabated. Irrigators resent the power companies for doing whatever they please, blame the

148. Part of the pressure behind Colbún's expansion is the government's plan to begin to privatize the company in late 1996, motivating it to stabilize and improve its legal and financial position.

149. Dirección de Riego/VII, Asignación de los Derechos de Aprovechamiento de la Zona de Maule Sur, Orden No.233 (Mar. 29, 1995).

150. Uncertain titles and rigid infrastructure are two important constraints on water rights markets throughout Chile. *See* Bauer, *supra* note 5; BAUER, *supra* note 6, at chap. IV; RÍOS BREHM & QUIROZ CASTRO, *supra* note 36.

151. For background on the Canal Linares, *see* Doña Martínez & Espinoza, *supra* note 85.

152. DGA, Análisis de la Disponibilidad y Uso de las Aguas Superficiales del Río Maule, Informe Final (1995). On regularization of water titles, *see* Bauer, *supra* note 5; BAUER, *supra* note 6, chaps. III, IV.

153. *See* Bitrán & Sáez, *supra* note 72.

government for letting them get away with such behavior, and continue to organize lawsuits and political pressure.[154]

VI. REFORMING RIVER BASIN MANAGEMENT

When the Concertación government came into power in 1990, reforming the Water Code was part of its agenda. After two years of preparation, including public discussion and comment, the DGA and the President sent a package of reforms to Congress in December 1992.[155] The reforms aimed to tighten some of the more "permissive" aspects of the Code, particularly the articles allowing speculation and non-use. They also expanded somewhat the DGA's administrative duties. The most controversial proposal would have declared forfeit any water rights not used for a five-year period. Private sector interest groups and the rightwing political parties in Congress eventually rejected the proposal.[156]

However, neither the government's proposals nor the resulting public debate raised the issues discussed in this article. There was almost no mention of the conflict between consumptive and non-consumptive water rights. There was no discussion of guidelines for managing multipurpose reservoirs, no proposals either to modify the existing compacts governing Lake Maule and Lake Laja, or to try to negotiate a new agreement in any other river basin. Moreover, no one mentioned the role of the courts or the policy implications of their decisions. The neglect of these issues is surprising in view of their importance and controversy, and in large part reflects their political sensitivity.

The debate came closest to addressing these issues when it confronted the topic of river basin or watershed management.[157] River basin conflicts did not become a serious problem in Chile until the 1980s, despite some early concern in the 1960s.[158] In recent years, sustained economic

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154. A recent World Bank mission to Chile reached similar conclusions about the Maule situation, commenting that the inter-sectoral conflict, although serious, had intensified by institutional failures. John Briscoe, Water Resources Management in Chile: Lessons from a World Bank Study Tour (World Bank internal document, Jan. 1996).

155. REPÚBLICA DE CHILE, Proyecto de Ley que Modifica el Código de Aguas, Ministerio Secretaría General de la Presidencia, Mensaje No. 283-325 (Dec. 2, 1992). The government's policies are further explained in *Dirección General de Aguas, Bases para la Formulación de la Política Nacional de Aguas*, 2 REVISTA DE DERECHO DE MINAS & AGUAS 259 (1991); DGA, *Actas del Seminario sobre Política Nacional de Aguas*, 4 REVISTA DE DERECHO DE AGUAS 159 (1993); Gustavo Manríquez, *Política Nacional de Aguas: Formulación, Objetivos, Instrumentos, Opciones, Alternativas y Proposiciones*, 1 DERECHO EN LA REGIÓN No. 1, at 65 (1992).

156. The debate over this proposal is discussed in Bauer, *supra* note 5, at 650-51, and BAUER, *supra* note 6, chap. IV.

157. Referred to as *manejo de cuencas*.

158. For historical background, see BAUER, *supra* note 6, chap. V.

growth has increased pressures on water resources throughout the country. The specific problems of water quality and quantity vary from one region to the next, but the common diagnosis is that current institutional arrangements cannot adequately coordinate water uses. By 1990, river basin management was a familiar topic in Chilean water policy circles, steadily promoted by two United Nations agencies, the Food and Agriculture Organization and the Economic Commission for Latin America and the Caribbean.[159] There has been considerable debate and a wide range of positions taken about how to improve the situation. Some would prefer to continue relying on voluntary cooperation by the interested parties. Others have proposed creating a new administrative organization with real enforcement power. Some have proposed limiting participation to private rights-holders, while others would include only the relevant state agencies. Still others would prefer various combinations of public and private participation.[160]

In its reform package, the government proposed creating new regional agencies for selected river basins. These "administrative corporations" would be hybrid agencies, composed of the major public and private actors in basinwide water use. The new agencies would include the participation not only of water rights owners and their organizations, but also government agencies, state enterprises, municipal governments, universities, and other private sector and non-governmental organizations. The proposal did not discuss many details about how the new agencies would work: for example, the procedures for making and enforcing decisions, the proportions and voting rights of different members, the source and amount of financing, or the agencies' powers and duties in relation to existing organizations. Nor was there any mention of non-consumptive rights.[161]

The DGA's proposal was fiercely criticized for being heavy-handed and vague. Neoliberals and other right-wing interest groups blasted the river basin agencies for the same reasons they rejected the other elements of the reform package: the proposal was a "statist" attempt to undermine property rights and the free market, reminiscent of the dark days of the

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159. *See, e.g.*, COMISIÓN ECONÓMICA PARA AMÉRICA LATINA Y EL CARIBE, BASES CONCEPTUALES PARA LA FORMULACIÓN DE PROGRAMAS DE MANEJO DE CUENCAS HIDROGRÁFICAS, Informe LC/G.1749 (1992); FOOD AND AGRICULTURE ORGANIZATION, PRIMER CONGRESO LATINOAMERICANO DE MANEJO DE CUENCAS HIDROGRÁFICAS: INFORME FINAL Y MEMORIAS DE LAS COMISIONES DE TRABAJO (1991).

160. *See* works cited *supra* note 159. *See also* CENTRO DE INVESTIGACIÓN Y PLANIFICACIÓN DEL MEDIO AMBIENTE, *supra* note 50; Humberto Peña, *Caracterización de los Sistemas Hidrológicos en Cuencas Chilenas Respecto de su Contaminación*, *in*, PROTECCIÓN DEL MEDIO AMBIENTE 219 (Herman Schwember ed., 1990); Fernando Peralta T., *Descripción General del Manejo de Cuencas*, *in* SEGUNDA CONVENCIÓN NACIONAL DE REGANTES DE CHILE 134 (1989).

161. *See* Bitrán & Sáez *supra* note 72.

Agrarian Reform. Many water users and canal associations feared losing their autonomy to a new and unknown bureaucracy. Nonetheless, the critics differed in their preferred solutions. The more ideological critics claimed that the present Water Code and water market were working fine and no changes were called for.[162] Others agreed with the government that basin-wide management was needed, but favored improving existing users' organizations rather than creating new ones. Such reform would require strengthening and expanding the vigilance committees, whose inability to regulate multiple uses was evident in the Maule River basin. In any case, the proposal's critics rejected the idea of widening the basin agencies to include people who had no water rights.[163]

Opposition to the proposed reforms forced the government to withdraw all of its proposals by late 1993. It is unclear how the basin agencies would handle the issue of consumptive and non-consumptive rights because it would entirely depend on the details of their structure and function. The critics' fears of massive state intervention were exaggerated, since in general, the Concertación government understood that placing new restrictions on property rights would be unconstitutional and politically impossible without the political support of the right-wing and the private sector. In fact, in view of the political context it is hard to explain why the DGA put forth such an ill-defined proposal, apparently doomed to opposition and defeat. Since 1994, the Chilean government has continued to argue for some sort of river basin organization, but has moved the issue far down on its agenda because of its complexity and political sensitivity. Proposals about multiple water use were not included in the new package of Water Code reforms that the President sent to Congress in July 1996.[164]

EPILOGUE

Several recent events have kept these river conflicts alive and in the public eye. First, in early 1997, Chile's Anti-Monopoly Commission ruled

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162. Instituto Libertad y Desarrollo, *supra* note 39; Sociedad Nacional de Agricultura, *Código de Aguas: Observaciones de la SNA al Proyecto que Modifica la Ley*, EL CAMPESINO, June 1993, at 8.

163. *See generally* CENTRO DE INVESTIGACIÓN Y PLANIFICACIÓN DEL MEDIO AMBIENTE, *supra* note 50; CONFEDERACIÓN DE CANALISTAS DE CHILE, TERCERA CONVENCIÓN NACIONAL DE REGANTES DE CHILE (1993); ENDESA, El Derecho de Aprovechamiento de Agua en Chile: Visión de ENDESA (1993) (unpublished) (on file with author); Figueroa, *supra* note 39. Only ENDESA discussed the Code's omissions about the relationship between consumptive and non-consumptive rights and the building and operation of reservoirs, but ENDESA suggested no alternatives.

164. REPÚBLICA DE CHILE, Formula Indicaciones al Proyecto de Modificación del Código de Aguas, Ministerio Secretaría General de la Presidencia, Mensaje No. 005-333 (1996).

in favor of the DGA in a dispute with ENDESA over ENDESA's applications for new non-consumptive water rights. The Commission accepted the DGA's argument that granting ENDESA more rights would unduly restrict competition in the electric sector.[165] Second, the summer of 1996-97 was Chile's worst drought year of the century. In addition to agricultural losses, reservoirs were drained so low that the government finally had to impose electricity rationing until the arrival of the winter rains.[166] Third, ENDESA's dams on the upper Bío Bío River remain bitterly contested. In 1996-97, international pressure forced the World Bank to investigate ENDESA's compliance with the social and environmental conditions of the Bank's loan for Pangue. When confronted with the Bank's questions, ENDESA pre-paid the loan and secured other financing, a highly unusual procedure. The planned second dam, Ralco, has been given qualified approval by the government and is now the focus of national and international opposition.[167] Each of these events has kept the issues in the public eye and highlighted the fact that they are by no means fully resolved.

CONCLUSIONS

This article has argued that Chile's legal and institutional system has done a poor job of coordinating multiple water uses and river basin conflicts. These are tough problems for any system, among the most complex in natural resource management since private actions have many third-party effects and external costs and benefits. There are no easy solutions. Nonetheless, the Chilean experience shows that a laissez-faire approach that relies mainly on private bargaining is not sufficient and in some cases makes conflicts worse. Together Chile's 1981 Water Code and 1980 Constitution established a neoliberal framework for water management, made up of strong private property and economic rights, free market transactions and limited state regulatory authority. A stronger judiciary with greater powers and responsibilities backs up the framework. It is a textbook example of Chicago style law-and-economics. River basin conflicts

165. Comisión Preventiva Central Anti-Monopolios, Dictamen No. 992/636 (Nov. 26, 1996), Comisión Resolutiva Central Anti-Monopolios, Resolución No. 480 (Jan. 7, 1997). *See also* Bitrán & Sáez, *supra* note 72.

166. *See, e.g., Emergencia Eléctrica por Sequía: Los Costos de una Tardanza*, EL MERCURIO, Apr. 20, 1997, at B1, B4.

167. Erica Adshead & Christián Opaso, *Second Bíobío Dam Hits Choppy Water*, 10 WORLD RIVERS REV., Jan. 1996, at 1, 4; Glenn Switkes, *Chilean Dam Builders Slip Through the Noose*, 12 WORLD RIVERS REV., Apr. 1997, at 11; Pilar Molina, *Conservar o Producir*, EL MERCURIO, Mar. 23, 1997, at D4, D6.

have put this framework's capabilities to the test, and thereby revealed some crucial flaws.[168]

Within the agricultural sector, the current framework has had mixed results, on balance perhaps positive. Water users strongly support the increased legal security of property rights, which has helped to consolidate the local canal associations that are responsible for day-to-day water management. On the other hand, market trading has been quite limited, and market incentives designed to raise irrigation efficiency have been largely ineffective.[169] Beyond agriculture, however, the institutional framework has been more severely strained. Problems of multiple water uses and relations among different economic sectors have been hard to sort through. In many areas the problems continue to be a source of serious conflict. Relying on private bargaining to internalize external costs has not been effective.[170]

In two of the country's most important river basins, the Maule and the Bío Bío, private bargaining has failed to resolve conflicts between the owners of consumptive and non-consumptive water rights, i.e., between irrigators and hydroelectric companies. Because private rights are so strong relative to the state water agency's regulatory authority, the bigger and more powerful water users have little incentive to negotiate. The electric companies in particular have little to fear either from the DGA or from smaller water users. Irrigators, on the other hand, have less bargaining power because they have less economic and political clout and face higher transactions costs in organizing themselves. Moreover, the electric companies are national political players while the irrigators' influence is more local and regional. Private water users' associations (vigilance committees) have been unable to settle these disputes or to impose their decisions on their non-consumptive members. As a result, the disputes have repeatedly ended up in court.

Under the current Constitution, the judiciary has broad powers to review state administrative actions. Both the DGA and the higher courts share a strong preference for strict interpretation and legalistic behavior. In routine matters, this combination of administrative and judicial formalism works fairly well; the DGA is careful to observe the limits of its authority, and the courts generally defer to its technical expertise while occasionally correcting administrative errors or abuses. With harder problems, like those raised by non-consumptive water rights, the combination is less effective. When faced with substantive policy issues and ambiguous laws, the DGA

168. For further discussion of Chile's institutional model, *see* BAUER, *supra* note 6, chap. II.

169. On the Water Code's impact in the agricultural sector, *see* Bauer, *supra* note 5, and BAUER, *supra* note 6, chap. IV.

170. *Compare with* Rosegrant & Binswanger, ROSEGRANT & GAZMURI, *supra* note 1.

has tended to adopt a legalistic position in order to defend itself from criticism. The agency has been so wary of stepping beyond its explicit duties that it has been passive more often than assertive. This behavior has been reinforced by the scrutiny of the Controller General and is clearly what the military regime intended in the 1980 Constitution.[171] However, the judiciary has also often ducked its own larger responsibilities. The courts have found formal or procedural reasons to avoid the substance of difficult issues, or they have ruled superficially based on insufficient analysis of the range of interests at stake. Unfortunately, the supreme court has led the way in this respect, and in Chile the supreme court exerts strict and centralized control over the rest of the nation's judicial system.[172]

These institutional arrangements have left a partial vacuum in public decision-making, involving precisely the difficult issues that demand political judgment. The most direct way to straighten out the uncertainty about consumptive and non-consumptive water uses would be through new legislation. Indeed, to work well and avoid paralysis, the current institutional model seems to require regular intervention by the law-making branches of government, i.e., the President and the legislature. So far, such intervention has been prevented by political deadlock and eclipsed by other governmental priorities. More troubling is that the irrigation-hydroelectric clash is a fairly straightforward problem, albeit difficult. The model's limitations are more serious in other river basin conflicts with added layers of complexity. Problems such as water pollution from urban, industrial, and agricultural sources, the protection of minimum flows for environmental purposes, inter-basin water transfers, and groundwater management have worsened with continued economic development.

In this context, creating new basinwide organizations as they are currently discussed in Chile would almost certainly be ineffective. The private economic rights of their members, who may refuse to comply with new regulations, would handicap such organizations. How the division of authority between the basin organizations and existing state agencies would be established is not clear. Sorting it out in practice would be slow and complicated. Even if the new organizations had some adjudicatory powers over their members, they would not replace the ordinary court system and would themselves be subject to judicial review through the *recurso de protección*. Ultimately, to be effective, the organizations would have to rest on some kind of legal agreement negotiated by their members, both public and private, dealing explicitly with the constitutional and property rights issues. Such agreements between ENDESA and the Irrigation Directorate have provided stable rules for managing certain reservoirs for decades.

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171. On the Controller General, see *supra* note 62.

172. *See* BAUER, *supra* note 6, chap. II, at note 35 and accompanying text.

However, those agreements were signed when both parties were state agencies and followed the government's instructions. To expand this pattern to include other water users too would require a degree of political determination and consensus that is highly unlikely under present circumstances and that will not likely appear until the problems get worse.

Finally, Chile's experience with river basin management shows some of the limitations of the free market approach to environmental policies. Many proponents of these policies, especially economists, tend to oversimplify the legal, institutional and political conditions needed for them to function well. This article has emphasized two such conditions: effective and legitimate processes of defining property rights and resolving conflicts. Because orthodox economic theory focuses on markets and exchange, that theory prefers to define property rights as commodities: private, exclusive, and transferable. However, with the physical environment this neglects many difficult issues. Natural resources are physically inter-connected and different resource uses affect one another, directly or indirectly. New definitions of property rights thus affect not only their owners, but also other resource owners and users. Property rights to nature affect collective interests and consist partly of overlapping rights to use shared resources, rather than private freedom to alienate and exchange. Because the social relations of resource use are complicated, transactions costs are necessarily high and there are major distributional consequences.[173] In short, "defining" property rights must take place within legal and political institutions, with concerns beyond the marketplace.[174]

A related conclusion is that neoliberal economics ignore or oversimplify what is involved in conflict resolution, the quintessential judicial function. The judicial process is fundamentally different from the commodity logic of the market and remains an unknown for most economic theory. Markets work by comparing things that are qualitatively different by the common numerical standard of price, which reduces things' concrete characteristics to an abstract and quantitative measure of value. While this

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173. *See* CAROL M. ROSE, PROPERTY AND PERSUASION: ESSAYS ON THE HISTORY, THEORY, AND RHETORIC OF OWNERSHIP 163-96 (1994); Bonnie G. Colby, *Transactions Costs and Efficiency in Western Water Allocation*, 72 AMER. J. AGRICULTURAL ECON. 1184-92 (1990). Richard Posner, *supra* note 1, at 32-33, 54-57, has said that exclusive property rights are inefficient if transactions costs are high, though this is hardly the position for which he is famous.

174. This broader social perspective on property rights can be found in YORAM BARZEL, ECONOMIC ANALYSIS OF PROPERTY RIGHTS (1989); Daniel W. Bromley, *Land and Water Problems: An Institutional Perspective*, 64 AMER. J. AGRICULTURAL ECON. 834 (1982); DANIEL W. BROMLEY, ENVIRONMENT AND ECONOMY: PROPERTY RIGHTS AND PUBLIC POLICY (1991); PROPERTY: MAINSTREAM AND CRITICAL POSITIONS (C. B. MacPherson ed., 1978); ROSE, *supra* note 173; SAX, *supra* note 39; E. P. THOMPSON, WHIGS AND HUNTERS: THE ORIGINS OF THE BLACK ACT (1st Am. Ed. Pantheon Books 1975).

encourages private exchange, it is not of much use in settling conflicts over resource uses, which are precisely about specific qualities and concrete differences. Resolving conflicts requires qualitative measures of value and a qualitative logic, to weigh and choose among a web of rights, rules, purposes, and interests. This again is an inherently judicial and political task, for which private bargaining and exchange cannot substitute. The same is true of internalizing externalities.[175]

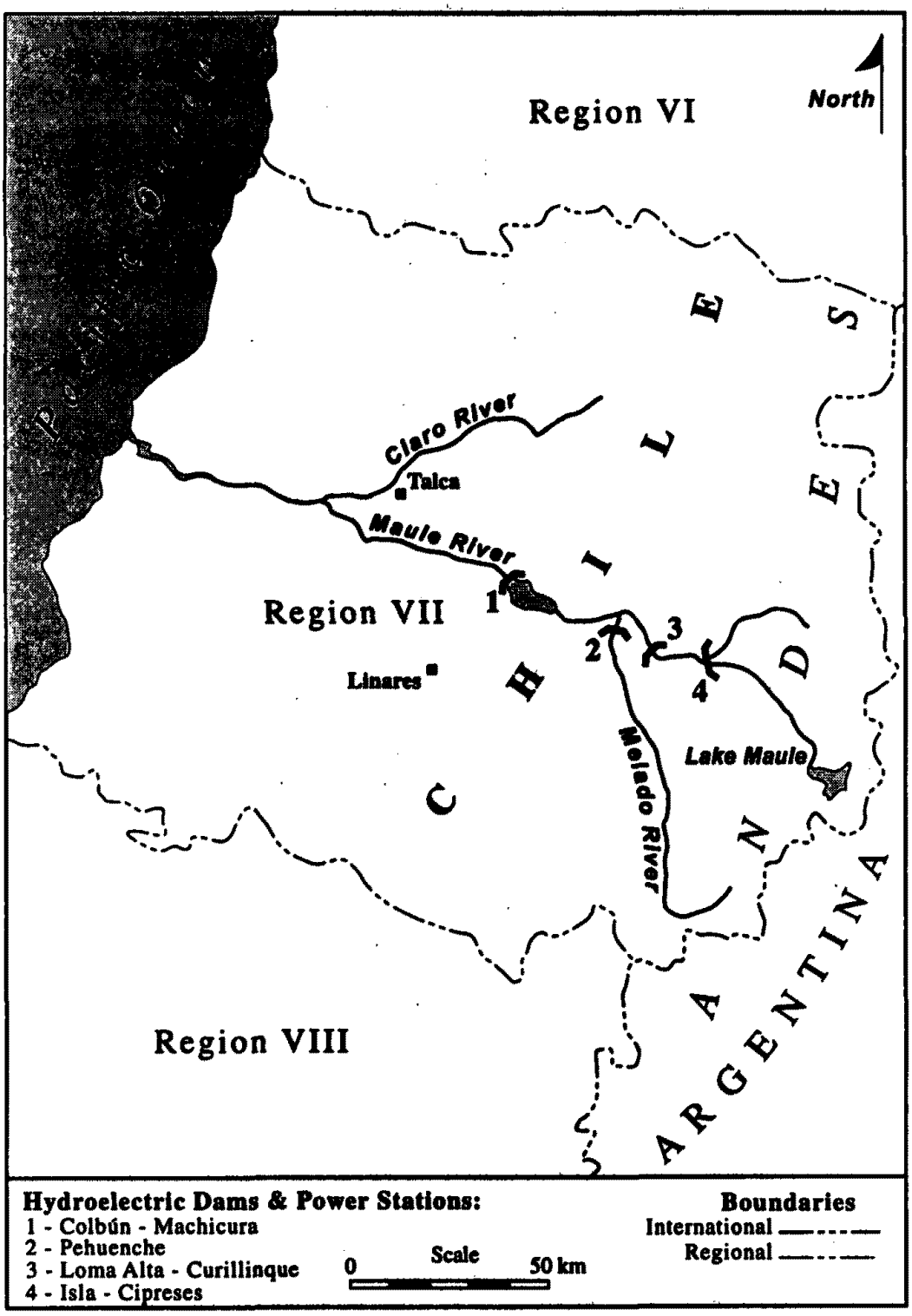
The capacity to resolve conflict is especially critical in a neoliberal legal and economic model, a model built around broad private rights and liberties and a minimal state. This capacity depends on the judicial system, which must control state regulation and balance private rights. The courts must be fairly independent from other branches of government, and willing and able to rule on disputes with substantive policy implications. This judicial model resembles the constitutional and common law traditions of the United States more than the civil law tradition of Latin America. Free market economics is a predominantly U.S. intellectual tradition and it seems to implicitly assume the framework of the U.S. legal system. However, Latin American legal systems and constitutional arrangements are different from the U.S. model. The courts are more subordinate and formalistic, seeking to avoid political and other non-legal factors, while the executive branch commonly has stronger centralized authority than in the United States.[176] Many Latin American countries have recently adopted neoliberal economic policies and institutional reforms, such as privatization and deregulation of a variety of sectors, without realizing the constitutional implications. The role of the judiciary becomes more strategic as state regulatory authority is reduced—in this way fundamental judicial reform is critical to the long-term success of neoliberal economics.[177] The Chilean experience reminds us

175. This argument draws on work in institutional economics. *See generally* JOHN R. COMMONS, THE LEGAL FOUNDATIONS OF CAPITALISM (1924); *see also* THE ECONOMIC THEORY OF AGRARIAN INSTITUTIONS 3-17 (Pranab K. Bardhan ed., 1989); Bromley, *supra* note 174; GEOFFREY M. HODGSON, ECONOMICS AND INSTITUTIONS: A MANIFESTO FOR A MODERN INSTITUTIONAL ECONOMICS (1988).

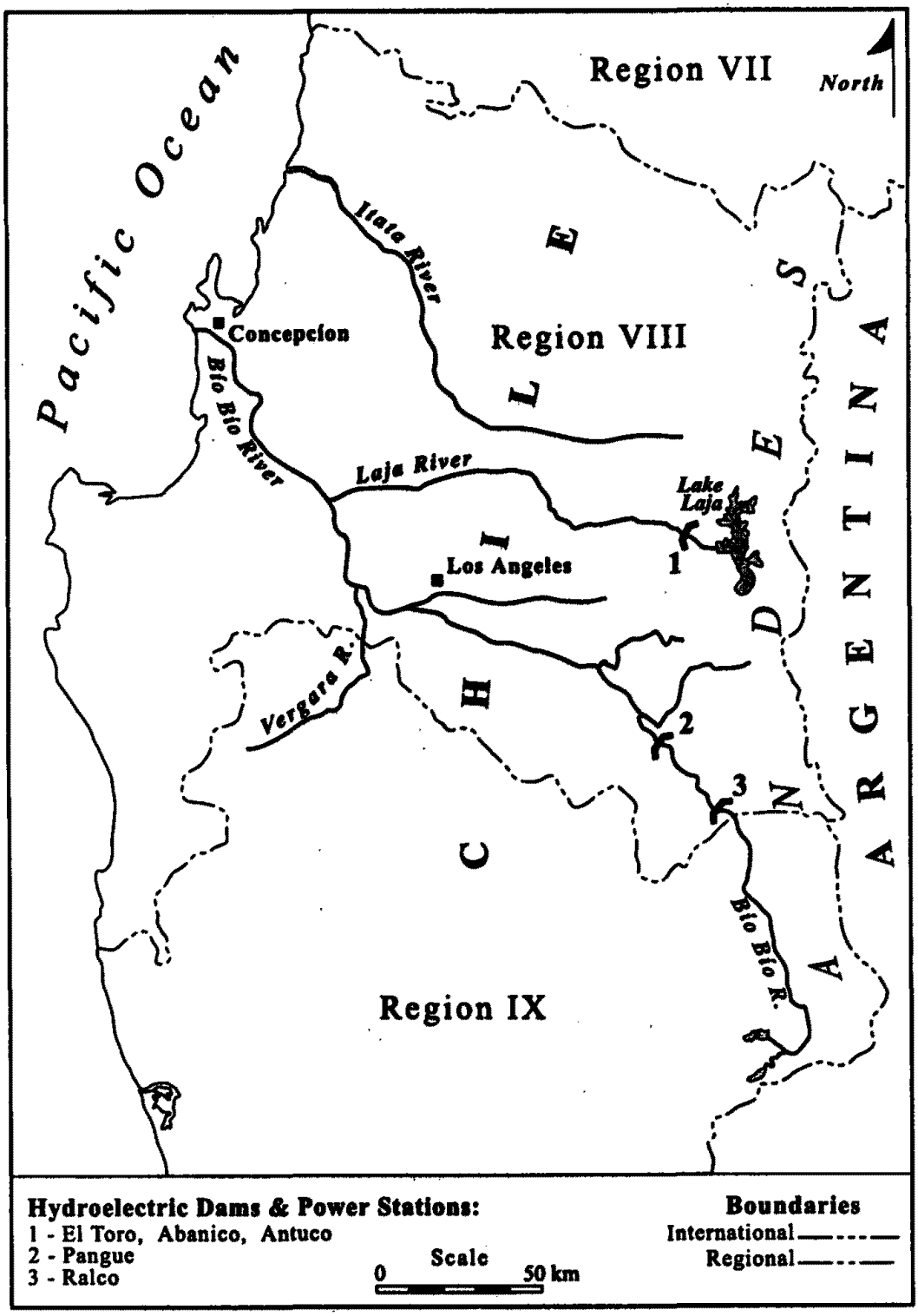
176. Richard Posner, for example, a prominent Chicago law-and-economics figure, assumes an activist policy-oriented judiciary that can resolve conflicts when transactions costs are high, *supra* note 1, at 49-50. *See also* Ugo Mattei & Mauro Bussani, *Making the Other Path Efficient, in*, LAW AND ECONOMICS OF DEVELOPMENT (Edgardo Buscaglia & Robert D. Cooter eds., 1995). On comparative law and judiciaries, *see supra* notes 18, 29, and 31.

177. The World Bank has begun to recognize this. *See* EDGARDO BUSCAGLIA & MARIA DAKOLIAS, JUDICIAL REFORM IN LATIN AMERICAN COURTS: THE EXPERIENCE IN ARGENTINA AND ECUADOR (World Bank Technical Paper No. 350, 1996); MARIA DAKOLIAS, THE JUDICIAL SECTOR IN LATIN AMERICA AND THE CARIBBEAN: ELEMENTS OF REFORM (World Bank Technical Paper No. 319, 1996); MALCOLM ROWAT ET AL., JUDICIAL REFORM IN LATIN AMERICA AND THE CARIBBEAN (World Bank Technical Paper No. 280, 1995).

to broaden the field of law-and-economics. The economic analysis of law and politics should be balanced by the legal and political analysis of economics.



Map 1: Maule River Basin



Map 2: Bío Bío River Basin