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**WATER RESOURCE ALLOCATION IN CANADA
(MANITOBA) AND BRAZIL (CEARA): LEGAL AND
INSTITUTIONAL IMPACTS ON BULK WATER REMOVAL**

By Sandra Cilce De Aquino

**Submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements
for the Degree of**

MASTER OF LAWS

**Faculty of Law
University of Manitoba
Winnipeg, Manitoba**

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BY

SANDRA CILCE DE AQUINO

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of
Manitoba in partial fulfillment of the requirement of the degree
of
MASTER OF LAWS**

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ABSTRACT

This thesis presents a comparative analysis of water allocation systems and their legal and institutional impacts on Bulk Water Removal (BWR), based on Canadian (Manitoba) and Brazilian (Ceara) systems. First, it studies the BWR concept, opportunities and problems, federal-provincial jurisdiction, international issues and management duties. Then, it analyses the water allocation issues that contribute to water shortage and needs for BWR.

This thesis argues that legal frameworks as well as policies can contribute to scarcity and the need for water transfer. Current water allocation regimes are not effective in dealing with water scarcity and, in fact, tend to exacerbate the problems experienced in the two regions studied. Thus, either a simple BWR moratorium or a non-assessed and non-monitored BWR is an unsustainable solution to water scarcity issues. This thesis concludes its analysis by offering suggestions for future water allocation systems, which include a legally well-defined water rights concept, participative and decentralised water management and an integrated legal strategy to establish adaptable allocation mechanisms. This will answer current and potential water demands and serve to avoid future water shortages, conflicts and needs for BWR.

DEDICATION

TO:

Janete Maria Goes Capiberibe and Joao Alberto Capiberibe

They are the masters who inspired me to dedicate myself to the study of Environmental Law, giving me a chance to work in the Environmental Department of Amapa State, in the Amazon Region, Brazil.

ACKNOWLEDGEMENTS

I would like to express my sincere appreciation to my Thesis Supervisor, Colin Gillespie, Adjunct Professor, for his generous and invaluable assistance, and to Professor DeLloyd J. Guth, Director of the Master of Laws program for his continuous encouragement and moral support throughout the course of the program. I would also like to thank my External Reviewer, Professor J. Owen Saunders, Faculty of Law, University of Calgary, for productive criticisms. I would also like to express my sincere appreciation to the staff of the E.K. Williams Law Library, especially for Gail Mackisey, Muriel St. John, Regina Rumancik and Susanne Wallace for the assistance they provided to me throughout the course of the program. Thanks also to my friends Ana Leveque, Arzu Ozur, Carlana Barkman, Erik Herinksen, Heike Schmid, Janet Boschmann, Marcus Steeds, Markus Buchart, Merrell-Ann Phare, Monika Sobotova, Nancy Fazenda, Richard Shore, and Simy Buckwold. And special thanks to my personal friends Ricardo Madrona Saes, Corporate Lawyer in Sao Paulo, and Tiago de Oliveira Pinto, Anthropologist of the University of Sao Paulo, for their encouragement and financial support. I remain grateful to my mother, Maria Lobo De Oliveira, and my stepfather, Joao Augusto Santos, in Brazil whose love and encouragement ensured that I concentrated on this work. I am deeply grateful to all of these individuals for all of the help they have extended to me in the course of completing this thesis.

PREFACE

This thesis presents a comparative analysis of water allocation systems and their legal and institutional¹ impacts on Bulk Water Removal (BWR)², based on Canadian (Manitoba) and Brazilian (Ceara) systems. First, it studies the BWR concept, opportunities and problems, federal-provincial jurisdiction, international issues and management duties. Then, it analyses the water allocation issues that contribute to water shortage and needs for BWR, based on the statements (1) “that individual actors are susceptible to incentives” provided by institutions, which can be both “informal such as customs and codes of behavior” and “formal such legal

¹That is “formal institutional arrangements” for water allocation management. They are relevant parts of the constitution and the related water and environmental laws and policies. This term “formal institutional arrangements” is concept-based on Kemper’s explanation of “institutional arrangements”, Karin E. Kemper, “The Cost of Free Water: Water Resources Allocation and Use in the Curu Valley, Ceara, Northeast Brazil”, *Linkoping Studies in Arts and Science*, 137 (Linkoping, Sweden: Linkoping University, 1996). She explained that the term institutional arrangements “ indicates the structural nature of institutions,” and they “are the structures within which decision making takes places”, *ibid.*, respectively, at 33 and 45. She also distinguished “between three categories of institutional arrangements; formal and informal institutional arrangements in the water sector, and institutional arrangements originating in other sectors”, at 46. Examples of institutional arrangements in the water sector are: 1) formal- “national water laws, the constitution, governmental or municipal decrees, and administrative rules;” 2) informal- “customs, generally accepted codes of behavior, and social norms;” 3) those “originating in other sectors” – “electricity pricing, market access, and credit markets”, at 46 and 47. Therefore, this thesis analyses the following legal fields and their rules related to water allocation and BWR: in Chapter Two, Constitutional law; in Chapter Three, International law; in Chapter Four, Property; and, in Chapter Five, Administrative and Environmental Laws are discussed in the analysis of Manitoba and Ceara’s water allocation systems.

²The BWR concept is based on the Canadian federal program: large-scale removals of water by man-made diversions, such as canals, tanker ships or trucks, or pipelines. It is not necessarily exported out of province or the country but it is “exported” from its basin of origin: Environment Canada, *The Management of Water: Bulk Water Removal and Water Export – Frequently Asked Questions*, (Environment Canada: Fresh Water, 1999) on line < <http://www.ec.gc.ca/water/index.htm>> (last update: 18 August 1999).

regulations and laws,³ and (2) that the features of water laws have contributed to water shortages.⁴ The problem is simple: how do present day legal arrangements contribute to or complicate water scarcity problems and demands for BWR. This thesis relies on water legislation and policies from Canada and Brazil in order to support the conclusion that the major problem is inappropriate water allocation management.

Canada and Brazil are relatively equal in size but vastly different in population size. Canada with 9,922,330 sq. km. is slightly larger than Brazil that occupies 8,514,215 sq. km. However the Canadian population at 28 million is dwarfed by the population of Brazil with approximately 170 million Brazilians.⁵ Both retain multicultural populations that are of European descent; Canada has an official bilingual culture (English and French) while Brazil has a single official language (Portuguese) and several indigenous languages. Canadians have the English common law tradition, except for codified civil law in Quebec, while Brazil follows the continental European civilian legal system.

³Karin E. Kemper, *supra* note 1, at 33.

⁴David Percy, "The Institutional Creation of Water Shortages on the Canadians Plains". *Symposium on Interbasin Transfer of Water: Impacts and Research Needs for Canada, Saskatoon, Saskatchewan 9 and 10 November 1987*, ed. by W. Nicholaichuk and F. Quinn (Ottawa: Canada Environment, 1987), at 451. See also David Percy: "Water Rights in Alberta", *Alberta Law Review*, Vol. XV, 1977, "Legal and Jurisdictional Aspects of Interbasin Transfer", *Canadian Water Resources Journal*, Vol. 6, N° 2, 1981; "Water Rights Law and Water Shortages in Western Canada", *Canadian Water Resources Journal*, Vol. 11, N° 2, 1986; *The Framework of Water Rights Legislation in Canada* (Calgary: The Canadian Institute of Resources Law, 1988);

⁵Brazilian Institute of Geography and Statistics -IBGE, Census 2000, on line <<http://www.ibge.gov.br/english/default.php>>

Both countries have a relative abundance of water resources, albeit not evenly distributed over their territory.⁶ As a result, they have dry areas such as Palliser's Triangle⁷ in the western Canadian province of Manitoba and the Drought Polygon in Brazil's northeast, where the state of Ceara is located.

Manitoba and Ceara were chosen for this comparative analysis due to the similarity of their water-related environmental and socio-economic issues: unpredictable and sporadic drought seasons⁸ and high water demand for agricultural activities. In addition, the following were important factors in selecting Manitoba and Ceara for this comparative water allocation

⁶For instance, "of Brazil's water, 80 percent is in the Amazon Basin, accounting for 63 percent of the territory but only 5 percent of the population. The Northeast, with 13 percent of the area and 35 percent of the population, has only 4 percent of the water resources. In the South and Southeast regions, with 60 percent of the population, water scarcities are due to the deterioration of water quality," Musa Asad et. al, *Management of Water Resources: Bulk Water Pricing in Brazil*, World Bank Technical Paper N° 432, (Washington, D.C.: The World Bank, 1999, at 17.

⁷That is "arid areas of the southern prairies". "The area was first thoroughly described by the Palliser expedition in 1858-59, when it was too arid to be valuable for agriculture." Percy, "Water Rights in Alberta", *supra* note 4, at 143.

⁸Manitoba is located in the Canadian prairies that are part of the semi-arid central plain of North America. "The quantity and quality of water available within the region varies widely from year to year and within the year. The southern part of region, where most of the population lives in urban and secondary centers has the greater potential for industrial development but often has very limited and unstable water resources...Superimposed on these climatically based water scarcity problems is the possibility of periods of appreciably below normal precipitation resulting in drought conditions. These conditions, which have occurred randomly throughout the region's recorded history, bring both social and economic hardship. As a result, the threat of drought itself is of considerable importance, in that it quite often deters investment and economic development," *Final Report on Activities Carried out under the Canada/Manitoba: Interim Subsidiary Agreement on Water Development for Regional Economic Expansion and Drought Proofing*", Canada and Manitoba Governments, Agreement Management Group, December 1987, at 1. For this agreement, fourteen areas with water supply problems were considered. These were: Town of Altona, La Salle River basin, Edwards Creek (Town of Dauphin), Town of Grandview, Town of Morris, Pipestone Creek, R.M. of Franklin, R.M. of Rhineland, Town of Carman, Boyne River watershed, Irrigations areas north of the Assiniboine River, Town of Rivers,

study: 1) There are areas in Manitoba in frequent risk of experiencing water shortages in particular, southern Manitoba, 2) Manitoba has developed a legal framework related to water allocation issues,⁹ including rules related to BWR; 3) While Ceara has not created rules to deal with BWR, it has a system of water regulation in place, and 4) Ceara has an installed system of reservoirs and other tools to as a water supply mechanisms.

These two systems are studied to gain insight into their water allocation effectiveness and efficiency, with a particular focus on water conservation, water scarcity and the use of large water transfers to meet needs. How are their institutional arrangements organized and operated? Do they have well defined water rights? Are they personalized, non-transferable, quantifiable? Do they grant rights and access for new users? Are their water rights flexible enough to be transferable for conservational purposes and proportional to actual stream flow? Are their models administrative, technical or participatory? Does their model have the public interest in mind? Are their institutional structures and policies reasonable enough to provide enforcement and control over water laws? Do their structures sustain their costs? Do they have mechanisms for pricing water use, for solving water conflicts, for conserving water

Village of Pine River, Village of Mcauley. In fact, Manitoba has uneven water distribution and has faced two extreme natural disasters: droughts and floodings.

⁹*Water Use & Allocation, 1999 Public Consultation, Summary and Conclusions* (Winnipeg: Manitoba Conservation: Water Resource Branch, 1999). See also Percy, "Water Rights Laws and Water Shortages in Western Canada". *supra* note 4.

resources? How do they evaluate, plan, and monitor their scarcity problems?

Water is essential to all forms of life. As one of the earth's most important natural resources it deserves legal protection and effective treatment. Governments are responsible for environmental protection and conservation of natural resources for future generations. Over time, water use has become "subjected to a range of legislative controls"¹⁰ but enforcement continues to face obstacles and restrictions, both in the public and private spheres.

Public administration is a governmental activity practiced by legislative, jurisdictional, and executive powers. This is true for every action, and inaction, related to the framing, forming and implementing of governmental policies. In this thesis, "public administration" is defined as the practice of executive power, and regarding governmental institutional arrangements, as the ability to co-ordinate and impose decisions and choices aimed to realize specified-goals, such as water allocation.¹¹ Public administration duties in the area of water protection often include regulation and enforcement powers to ensure compliance with water allocation regimes.

¹⁰Neil Finkelstein & Rachel Urman, "*Constitutional Jurisdiction in Relation to Water Law*", (National Symposium on Water Law, Environmental Law CLE Program, Toronto, April 1999) [unpublished].

¹¹"Different water resources allocation mechanisms fit into different types of overall water resources management systems. Water trading, for example, does not preclude integrated water resources management, but is to a certain extent dependent on such."

Water allocation, including the administration of water scarcity and bulk water removal, is a managerial and policing activity.¹² The major legal instrument that governs water use and rights is the permit system.¹³ A water permission system is required because water is under a scarcity risk.¹⁴ Increasing irrigation, urban and industrial developments often demand water. However inappropriate water usage and water allocation can contribute to increased scarcity of water resources.¹⁵

This thesis argues that legal frameworks as well as policies can contribute to scarcity and the need for water transfer. Current water allocation regimes are not effective in dealing with water scarcity, and in fact, tend to exacerbate the problems experienced in the two regions

Kemper. *supra* note 1, at 24. As she noted it is possible to isolate allocation issues and make them the principal focus of the research, *ibid*.

¹²There is a distinction between administrative power and jurisdiction. The first is an executive activity that administers and fulfils policies. The second, administrative jurisdiction, is a capacity to make policy and decisions that for Canadian and Brazilian's water resources is defined in their Constitutions as explained in Chapter two.

¹³Maria Concepcion J. Cruz has pointed out that "water rights are governed by three major legal instruments: the water permit; formal agreements arrived at after court proceedings and/or amicable settlement; and informal agreements among competing users based on social-cultural or political factors," at 11, *Legal and Institutional Issues of Irrigation Water Rights in the Philippines* (Laguna, Philippines: Agrarian Reform Institute. University of the Philippines at Los Banos, 1987).

¹⁴ "Water is a natural resource that can be renewable or depletable, depending on the source and on use. Water supplies come from *surface water* and *groundwater*. Surface water includes lakes, streams, and oceans. Groundwater has been accumulated over hundreds of thousands of years in underground aquifers that lie between layers of rock. Groundwater is primarily a depletable resource stock, although a small proportion (less than 5 percent) can be withdrawn each year and renewed by rainwater or snow melting into the aquifer", John M. Hartwick and Nancy D. Olewiler, *The Economics of Natural Resources Use*, Second Edition (USA: Addison-Wesley, 1998), at 175. Besides water being a non-renewable resource, not all water is potable or even accessible; "this is water in liquid form is 97,72 % (97% salt and 0,72% freshwater), in solid form is 2. 25% (such as iceberg) and as vapor is 0.03% of the Biosphere"; in Jose Afonso Da Silva, *infra* note 151, at 84.

¹⁵For example, the estimates for people without potable water in: Ethiopia is 83%, Afghanistan 79%, Morocco 41%, Paraguay 67%, Haiti 60% and Poland 11%. Vladimir

studied. Thus, neither a simple BWR moratorium nor a non-assessed and non-monitored BWR provide a sustainable solution to water scarcity issues. In fact, water allocation issues have been largely neglected in water resource management frameworks because water quality and flood control have been primary problems in water resource management. Such issues exist even in drought regions but water scarcity continues to remain a problem requiring discrete management approaches.¹⁶ This thesis concludes its analysis by offering suggestions for future water allocation systems, which includes a well-defined water rights concept, participative and decentralized water management and an integrated strategy in order to establish adaptable allocation mechanisms to answer current and potential water demands and to avoid water shortages, conflicts and needs for BWR.

Passos De Freitas, "Poluicao de Aguas", in *Direito Ambiental em Evolucao* (Curitiba: Jurua Editora, 1998), at 362; translation by Sandra Cilce De Aquino.

¹⁶Paraphrased, *supra* note 1, at 23.

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CHAPTER ONE

BULK WATER REMOVAL: LEGAL DEFINITIONS, OPPORTUNITIES AND PROBLEMS

1. The concept of BWR

Bulk water removal (BWR) in the Canadian legal system means any “**large-scale removals of water by man-made diversion**, such as canals, tanker ships or trucks, or pipelines. It is not necessarily exported out of the province or country but it is **exported from its basin of origin**”,¹⁷ in the Canadian system.

In the Brazilian system, there is neither a specific legal nor administrative definition of bulk water removal. However BWR could be recognized by implication in the national water law provisions when referring to “... other uses that affect the flow, quantity, or quality of water existing in a body of water,”¹⁸ which require a permit. That is, any water project that removes water from its basin of origin and affects the flow, quantity, or quality of water.

¹⁷BWR concept, federal governmental, *supra* note 2 [emphases added].

¹⁸Article 12, item V of *Law 9433/97*, which establishes the National System of Water Resource Management and the National Policy of Water Resources. *Law 9433/97, the National System of Water Resource Management and the National Policy of Water Resources, Lei Federal 9.433/97 de 08 de Janeiro de 1997, Politica Nacional dos Recursos Hidricos, 2a.ed. rev. atual.* (Brasilia: Ministerio do Meio Ambiente-MMA, Secretaria dos Recursos Hidricos-SHR, 1999), on line, in Portuguese. MMA/SRH (Ministerio do Meio Ambiente/Secretaria dos Recursos Hidricos) <www.mma.gov.br> (last modified: 28 August 1998). In English, Brazilian Association of Water Resources . *Associacao Brasileira de Recursos Hidricos (ABRH), Legislações, Legislações Federais. Para ver a Lei em Inglês*< <http://abrh.org.br>> (last updated 14 March , 1997). As well. Ceara Water Law requires a permit for “any undertaking that consumes, or affects the flow, quantity or quality of water resources, surface or ground waters.” Article 4 of *Law 11 996/92*, which establishes the Ceara State Water Resources, *infra* note 524.

It is not possible to analyse each operative word of the BWR concept in Brazil given that there is a general lack of statutory definitions. Similarly, Canadian provincial water statutes¹⁹ do not explicitly define bulk water removal. As such, we are left only with the federal Canadian definition of BWR and need to examine²⁰ its operative words: “large-scale”, “removal”, “water”, “man-made diversion”, “exported”, and “basin of origin”.

1.1. “Large-scale”

A water permission system requires a clear definition of the adjective “large-scale”, in order to determine which water removal is or is not BWR. How much water must there be before it is a BWR? What volume of water constitutes “large-scale”? The answer ultimately must be relative and arbitrary.

¹⁹*Alberta Water Act*, S.A.1996, c. W-3.5, Alta. Reg. 193/98, Alta Reg. 205/98, Alta. Reg. 91/99, Alta. Reg. 200/99; *British Columbia Water Act*, R.S.B.C. 1996, c. 483, and *Water Protection Act*, R.S.B.C. 1996, c. 484; *Manitoba Water Rights Act*, R.S.M. 1988, c. W 80, *Water Power Act*, R.S.M. 1987, c. W 60, and *Water Resources Conservation and Protection and Consequential Amendments Act*, S.M. 2000, c. 11; *Newfoundland Water Resources Protection Act*, S.N. 1999, c. W-4.1; *Nova Scotia Water Resources Protection Act*, N. S. 2000, c.10 and *Water Act*, R.S.N.S. 1989, c. 500 as amended 1992, c. 14, s. 53; 1993, c. 19, s. 3; 1994-1995, c. 1, s. 176 (14); *Ontario Water Resources Act*, RSO 1990, c. O. 40, *O. Reg. 285/99*, and *Water Transfer Control Act*, R.S.O. 1990, c. W.4; *Quebec Water Resources Preservation Act*, S. Q. 1999, c. 63.

²⁰This examination is based on related water statutes, *ibid.*, but not all statutes have definitions or even clauses that allow an implicit interpretation. For example, the *Quebec Water Resources Preservation Act* does not define any operative words. Moreover, it is a simple statute that does not establish many clauses regarding BWR, so probably any details will be done by regulations.

The definition of “large-scale” is inconsistent across provincial jurisdictions; for example, the *British Columbia Water Protection Act*²¹ establishes in S. 1 “Definitions and interpretations”:

“large scale project” means a project to divert or extract a peak instantaneous flow of 10m³ or more a second of water, but does not include a project

(a) that, on June 20, 1995, is complete or in operation, or

(b) for which, on June 20, 1995,

(i) site preparation has begun, or

(ii) the fabrication, construction, installation or supply of buildings, equipment, machinery or other facilities has begun.

Therefore, in B.C., even if the project has a large-scale dimension, it is not considered to be a large-scale project if it began before 20 June 1995.

The *Newfoundland Water Resources Protection Act*²² does not define “large-scale”; however, S. 5 (a) allows that water may be removed from the province where the water is contained in containers of not more than 30 litres in volume.²³ The question of interpretation remains: Does legal positivism apply: what is not prohibited is allowed? Is there a limit to the quantity of water that can be removed, even 30 litres at a time?

²¹*Supra* note 19.

²²*Ibid.*

²³The same legal technique is in the *Ontario Water Transfer Control Act*, *supra* note 19. S. 3 (6): “[S]ubsection (2) does not apply to water packaged in a container having a volume of 20 litres or less.” Subsection (2) is the major prohibition of transference of water.

As well, there is a distinction between small and large water transfers. Gary Fritz²⁴ emphasizes different types and sizes²⁵ of water exports, noting that: “the export of products that rely heavily on the use of water such as beverages, electricity, and paper; containerized shipments of water by truck, rail, or ocean tanker; pipelines carrying treated water supply between neighbouring communities; and minor interbasin diversions of shared boundary waters are generally considered small-scale exports.”²⁶

²⁴Gary Fritz, “Exporting Water: Toward a Policy Framework”, in *Water Export: Should Canada's Water Be for Sale? Proceedings of a Conference held in Vancouver, British Columbia on May 7-8, 1992* (Ontario: The Canadian Water Resources Association, 1992), at 57

²⁵In most cases, size is adopted as one water transfer criterion for its implementation because of the quantity of water supply and economic reasons. However, “how much water should be provided to in region ‘X’?” Usually, “the procedure was to estimate total and urban population in each water resource region for a certain period, the quantity of water used per capita and per unit of product, total national output of water-related goods and services, and the regional distribution of production, and from these estimates to construct the regional total of water for withdrawal uses, on-site use, and flow uses”. Charles W. Howe and K. William Easter, *Interbasin Transfers of Water-Economic Issues and Impacts* (Baltimore and London: Johns Hopkins Press, 1971), at 18. This method assumed that: 1) supplies of water will continue to be available at current prices; 2) there will be no technological change; and, 3) current inefficiencies in the use of water will persist; *ibid.* However, this technique can generate errors, “for under the stimulus of water shortage and increasing prices for water, the relationship of water use to population and production will change substantially. The basic difficulty with the requirements approach is that it makes no attempt to measure water-related benefits, a quantity necessary for rational water development decisions”; *ibid.* The discussion of benefits and costs of water transfer appears in item 2 of this chapter. This approach clearly does not consider dynamic population characteristics such as growth and migration.

²⁶Gary Fritz, *supra* note 24. Moreover, regarding small-scale exports, he explains that “in fact, given their relatively limited impact on society, the environment, and the general availability of water, these small-scale transactions are often not considered exports at all”, *ibid.*, at 58. On the contrary, others advocate that small-scale exports have harmful effects on the environment: for instance, “Cheryl Mendoza, a project manager with the Lake Michigan Federation, said the governors should be looking for ways to protect the lakes from a series of little diversions rather than a single big exportation proposal: ‘the real danger now is from the combined effect of proposals like that of the Perrier Corp. in Michigan and elsewhere to withdraw water from the Great Lakes basin in numerous smaller projects that fall under the minimum threshold;’” by Katherine Rizzo, “Great Lakes governors want water export agreement in place by 2004”, *The Metro Region* (14 December 2000) on line <<http://www.startribune.com/stOnLine/c/s.dll/article?thisStory=83143737>> great lake.

By contrast, "large mega projects" are those such as the North American Water and Power Alliance (NAWAPA), and the Grand Recycling and Northern Development (GRAND) Canal.²⁷

However, the effect²⁸ of a water transfer is a more significant consideration than the quantity of water removed. Water transfer

Frank Quinn also has stressed the distinction between small and large scale water transfers, reflected in the Canada's Inquiry 1985, which points out that "in its eventual response, the federal government accepted this distinction rather than try to provide one sweeping policy for all situations", in "Treading water: will Canada ever settle the export issue?", in *Water Export: Should Canada's Water Be for Sale?*, *supra* note 24, at 114. So, the polemic related to small and large scale water transfer effects still has an important place; see also Bocking's commentary *infra* note 30.

²⁷Garry Fritz, *supra* note 24, at 58. Summary description of the projects: 1) the North American Water and Power Alliance (NAWAPA) is a project developed in the early 1960's by the Ralph M. Parsons Company, with plans to transfer 160 million acre-feet per year from Alaska, northwestern Canada, and watersheds surrounding Hudson Bay and James Bay to arid areas in midwestern and western United States, the prairie provinces of Canada, and northern Mexico. "The total drainage of the project encompasses about 1.3 million square miles, with runoff of 800 to 1,000 million acre-feet per year (MAFY). The estimated cost of the project in 1990 dollars is \$ 300 billion," *ibid.*; and 2) the Grand Recycling and Northern Development (GRAND) Canal is a project "conceived in 1959 by Tom Kieras, calls for the construction of a dike between Hudson Bay and James Bay to transfer, currently a salt water body, into a fresh water lake through the impoundment of rivers that empty into the Bay. According to the plan, water flow would be reversed and canals, dams, power plants, and locks would be built to deliver this "new" water into the Great Lakes. The Great Lakes, in turn, would become a reservoir for fresh water waiting to be transferred to other destinations in North America. The estimated cost of the project in 1989 was \$ 100 billion," *ibid.* Regarding other project descriptions, see Charles W. Howe and K. William Easter, in Table 2. Summary of Information on Plans Proposed for Regional Water Transfer, *supra* note 25, at 12-13.

²⁸Faced with any water transfer's uncertain effects, one symposium had as an objective: "to identify the data and research needed to improve our understanding of the implications of water transfer in terms of natural processes, social values and policy alternatives", the *Symposium on Interbasin Transfer of Water: Impacts and Research Needs for Canada*, *supra* note 4, at vii. But besides water transfer uncertainties, it is possible to assess among its implications the morphologic effects. In the context of Canada's "opportunities for large scale storage and diversion projects and whose rivers exhibit highly variable and complex morphologies, the morphology of rivers is important because it provides the physical framework for many other river-related resources such as fisheries, recreation and navigation. By far the most important factor determining the morphology of a specific river reach is the flow regime. When it is artificially altered through interbasin diversion or regulation, morphologic changes invariably follow, but they can range from barely perceptible to dramatic for reasons that are not necessarily obvious a priori". Rolf Kellerhals, "Morphologic Effects of Interbasin

regulations should consider these effects, in addition to regulating the quantity of water being removed. For instance, the *Manitoba Water Resources Conservation and Protection Act* does not specifically define “large-scale,” but it clearly considers BWR as any amount of water “that could, individually or collectively, have significant adverse effects on the ecological integrity of Manitoba’s water resources or their associated ecosystem.”²⁹

Besides the large-scale water transfer effects, there are the effects of small-scale water transfers to be considered:

Unfortunately, it is precisely at the land-water margin that the impact of water projects is most severe, whether for hydroelectric generation or for water diversion and export. Since the most serious impacts result from the first water removed, even a small diversion can have serious consequences.³⁰

If a small diversion already presents serious consequences, a large-scale water removal has three characteristics that emphasize these outcomes: **size, indivisibility of the system, and life span.**³¹

Diversions”. *Symposium on Interbasin Transfer of Water: Impacts and Research Needs for Canada*, *supra* note 4, at 7.

²⁹*Supra* note 19. Like Manitoba’s Act, the *Nova Scotia Water Resources Protection Act* asserts that “...whereas large-scale removals of water, individually or cumulatively, may compromise both the ecological integrity of a system and sustainability of the resource....” *ibid.* Even though “large-scale” is not measured, the amount is determined by the impact on the environment. Moreover, Section 8 (1) foresees that “the Governor in Council may make regulations: (c) defining any word or expression used but not defined in this Act,” *ibid.* Probably, a regulation will establish what is understood as “ecological integrity” and “sustainability”. The meaning of “sustainability” is an issue discussed in this thesis, especially in Chapters Five and Six.

³⁰Richard C. Bocking, “The Real Cost of Dams, Diversions, and Water Exports”, in *Water Export: Should Canada’s Water Be for Sale?* *Supra* note 24, at 279.

³¹Characteristics pointed out by Charles W. Howe and K. William Easter, *supra* note 25, at 4.

Regarding size, a large-scale project's impacts cannot be denied. These are economic, hydrological and ecological,³² and vary from project to project, and can occur from the construction period through the operating lifetime of the project. For instance, impact concerns in the Gisborne Lake Water Bottling and Export Project³³ led Environment Canada to require an assessment of:

³²*Ibid.* at 5.

³³*Guidelines for Preparation of the Terms of Reference for the Gisborne Lake Water Export (McCurdy Group) Proposal*, a document prepared by the Environmental Assessment Committee (EAC) of Newfoundland as a requirement for the Gisborne Lake Water Bottling and Export Project. So, the proponent of this project responded to the guidelines' requirements in the Terms of Reference (TOR). Both guidelines' requirements and its answers are available in the "Terms of Reference for the Preparation of an Environmental Impact Statement and Comprehensive Study Report". Jacques Whitford Environment Limited, *Gisborne Lake Water Export Project* (1997) [unpublished, archived at Department of Environment and Labour of Newfoundland]. This project was proposed by the McCurdy Group of Companies of Gander, which would "bottle and export high quality water from the Gisborne Lake, Grand Le Pierre, located on Fortune Bay, Newfoundland," LGL Limited, *Environmental Impact Statement and Comprehensive Study Report Gisborne Lake Water Bottling and Export Project (EIS and CSR)* (1998) [unpublished, archived at the Department of Environmental and Labour of Newfoundland] at 1. This project would include the "construction of the following infrastructure :1- flow control structure (low head barrier) at the Gisborne Lake, 2-Intake at the south end of the lake, and 3- a combination tunnel/ pipeline to a bottling plant and marine loading facility," *ibid.* at 1. "The plan would be constructed on the east side of Grand Le Pierre Harbour in order to serve the proposed marine lodging facility, to be constructed near the harbour's entrance. Water (on the order of 300,000-500,000 cubic meters (m³) per week) would be withdrawn from the lake to be bottled for export as well as piped to tankers. At full production, one ship per week (alternating tankers and freight vessels) would dock at the loading facility. The design life of the proposed facilities is 30 years but the Project could run many more years than that," *ibid.* at x. The water would be exported to world markets, according to the proponent : "the project has been proposed in response to the excellent and growing worldwide markets for both bottled and bulk freshwater. As such, it represents a good prospect for economic development," *ibid.* Moreover, the *Environment Impact Statement (EIS) and Comprehensive Study Report Gisborne Lake Water Bottling and Export Project Addendum* (1999) [unpublished, archived at the Environmental of Newfoundland] is an addendum of Gisborne's EIS prepared by LGL Limited for McCurdy Group of Companies to respond to the various government agencies, Environment Canada, Fisheries and Oceans, and the Water Resources Management Division of the Department of Environment and Labour, through the Environmental Assessment Committee. This project is one of the data bases for BWR opportunities and problems' commentaries developed here.

the potential impacts of the construction, operation and maintenance, and decommissioning of the proposed undertaking on fish and fish habitat within the Gisborne Lake watershed and on marine fish, fisheries and habitat in Fortune Bay. This should include a discussion of resources conflicts, potential effects of dewatering within the watershed and implications for flows in Southwest Brook.³⁴

Large-scale water transfer projects involve impacts related to their size, as well as to water quantity, water quality, and air and soil pollution.³⁵ Such projects also require institutional and political arrangements and agreements to be implemented.³⁶ For instance, the Gisborne Project's Environmental Impact Study (EIS) "was prepared in order to meet the requirements of both provincial and federal environmental assessment processes." The EIS must receive approval from the Minister before the Project is allowed to proceed. A Comprehensive Study is required because the project is a type listed in the Comprehensive Study List Regulations of the Canadian Environmental Assessment Act (CEAA). CEAA is triggered if it is a federal project, if there is a transfer of federal lands, if it is supported by federal funds, or if the project requires a federal permit, licence or approval included in the Law List Regulations (CEAA, Section 5 (1)). The Project may require several federal permits if any of the waters affected are considered navigable (i.e., Section 5 (1) of the *Navigable Waters Protection Act*) or if the Project is deemed to result in harmful alteration, disruption or destruction of fish habitat (i.e., Section

³⁴EIS, *ibid.*, at iv.

³⁵EIS, *ibid.*, at 9, there are commentaries regarding pollutants, hazardous material and so on.

35 (2) of *Fisheries Act*). In addition to provincial and federal environmental assessment approvals, the Project may also have to obtain at least twenty-four municipal, provincial and federal permits.³⁷ Among these required permits, there are for instance: Certificate of Approval for Dams and Appurtenant Structures; Certificate of Approval for Bridges; Authorisation for Works or Undertakings Affecting Fish Habitat; Highway Access Permit; Certificate of Approval for any Industrial or Processing Works; and so on.³⁸

In Brazil, the Sao Francisco River Transposition plan³⁹ is another example of the need for such institutional and political arrangements. This

³⁶As Charles W. Howe and K. William Easter, *supra* note 25, at 5.

³⁷*EIS, supra* note 35, at 35, see also see Table 2.3. Permits and approval likely required for the Project. at 36.

³⁸*EIS, ibid.*, Table 2.3.

³⁹This project was proposed in the following years: in 1852 by Dom Pedro II Imperator, in 1913 by the Federal Department for Infrastructure against Droughts, in 1919 again by the Federal Department for Infrastructure against Droughts that recognised the technical unavailability of the project, in 1972 by the Parliamentarian Wilson Roriz, in 1981 by Minister Mario Andreazza, in 1994 by the Minister Aluzio Alves, and in 2000 as a new project by the National Integration Ministry, which is currently discussed at Federal Parliament. This history was presented for the Sao Francisco River Transposition Work Group of the Federal Parliament by Romulo Macedo, who is the current Water Resources Secretary of the National Integration Ministry, in a public hearing on 09 February, 2000 in Brasilia. Fernando Bezzara, who is the Minister of National Integration, also participated in this public hearing, giving a general explanation and comment. This public hearing document is available in Portuguese on the Brazilian Federal Legislative Power website, "Transposicao do Rio Sao Francisco", <http://www.camara.gov.br/intranet/comissao/index/grp/ctrami_gt>.

However, Joao Alves Filho pointed out that the first discussion about the Sao Francisco River Transposition plan was in 1847, through Antonio Marcos Macedo's preliminary studies. Crato-Ceara Superintendent, and he also noted that in 1998 a new study was presented by Beni Veras Minister, in *Transposicao das Aguas do Sao Francisco: Agressao a Natureza X Solucao Ecologica* (Maccio: Edicoes Catavento, 2000). This author also presented a history of this project but noted that most proposals were not implemented because "none of them presented consistent projects, they got only preliminary studies," *ibid.* at 48, (translation by Sandra Cilce De Aquino), see also explanation form 45-49, *ibid.* In this book, Joao Alves Filho presented a project proposal different from the National Integration Minister's project for the Sao Francisco River Transposition as a matter of the federal legislative power. Regarding this current

project, it is an official "plan" for a Sao Francisco River Transposition by the National Integration Ministry. However it is an "incompleted plan" with unfinished studies. Actually, this Ministry has not divulged details of the project's proposed engineering design or its environmental impact. However this plan has been "debated" by federal parliamentarians as having "undefined intentions". The Water Resources Secretary of the National Integration Minister, Romulo Macedo, commented on these intentions, arguing that this project is not a "real" water transfer but as ordinary as other "water canalization" (projeto de "aducacao de agua"), *ibid.*, at 9. He said that water transference gives the wrong idea of large-scale interbasin water removal, because it makes one think about an immense amount of water removal. *ibid.*, at 9. He uses the word "adutora," which means channel, aqueduct, canalization to conduct waters from a water origin to a reservoir ["adutora" – canal, galeria ou encanamento destinado a conduzir as aguas de um manacial para o reservatorio, in *Novo Dicionario Aurelio de Lingua Portuguesa*, 2ª Nova Edicao R Revista e Ampliada (Rio de Janeiro: Editora Nova Fronteira, 1986) at 51]. He also stressed that the project is simple from the engineering view point, and it plans to take only 2.5 % of flow river basin (2.5% de vazao), *ibid.*, at 10. Based on Fernando Bezzara's interviews, who is the Minister of National Integration, and on "confidential information" given by the technical staff related to this official federal plan, Joao Alves Filho has criticised this ministry project and presented another plan, *ibid.*, at 54. This unofficial plan is explained in Alves' book. This plan has two goals: 1- to revitalize Sao Francisco River ("revitalizar plenamente o rio Sao Francisco); and 2- to grant a plentiful water supply to Northeast of Brazil (garantir agua abundante para o Nordeste Setentrional), *ibid.*, at 69-73. Moreover, it would be done through the reinforcement of flow in the central channel of the river ("reforco de vazao na calha central do rio"). in a 10 or 15 year engineering plan (realizacao plena entre 10 e 15 anos), *ibid.*, at 77. That is, to increase the power of river tributaries, involving Sao Francisco, Parana and Tocantins river basins (" consiste no levantamento dos afluentes envolvendo as bacias dos rios Sao Franciscos, Parana e Tocantins"), *ibid.*, at 80. Moreover, it involves the following thirteen (13) given tributaries ("afluentes doares"), *ibid.*, at 81: 1- In Sao Francisco: Paracatu, Urucuia, Carinhanha, Correntes, Grande (Bahia), and Tequitai; 2- Rio Parana: Grande (Minas Gerais), Paranaiba, and I. Marcos; and 3- Rio Tocantins: Peixe, Peixinho, Balsas, and Gallhao, at 81. Inclusion of the last two river basins is one distinction from the federal government plan. He suggested that this plan foresees the possibility of building 18 hydroelectric plants at the medium and high point of the Sao Francisco River, besides 88 small and medium hydroelectric plants in the semi-arid region. This plan foresees a system of reservoirs connected by channels with a capacity to regulate more than 170m³ of water per second, adding up a grant total "flow" of 1.000 m³ of water per second", *ibid.*, at 81. These waters would be taken from the three river basins, Sao Francisco, Parana and Tocantins watersheds. This includes two big channels, which catch water from the Sao Francisco River and send it to Pernambuco and to Paraiba. Twelve other channels are involved: Xingo, Dois Irmaos, Serrao Alagoano, Jacare Verde, Bahia Norte, Bacias Cearenses, Arco Iris, Terra Nova, Metade do Sertao Pernambuco, Via Prata, Jati Acu, Piaui Caninde, *ibid.*, at 184-185. "Considering that the life of this project's construction would be between 10 and 15 years, its average cost per year would be at a maximum US\$ 1.20 billion/year or US\$ 791 million/year, respectively, for 10 or 15 years", *ibid.*, at 188. (All translations are done by Sandra Cilce De Aquino). The author did this estimating in 2000, when the Brazilian currency was around US\$ 0.55 (fifty five cents), and he only counted the project infrastructures such as channels. However, the Brazilian currency has been unstable since the end of 1998.

plan aims “to complement the hydrological regimes”⁴⁰ of the Brazilian Semi-Arid Northeast, which is known for lack of water resources, in the following states: Pernambuco, Paraiba, Rio Grande do Norte, and Ceara. On the other hand, water is also expected to come from the Sao Francisco riparian states: Minas Gerais, Bahia, Sergipe, and Alagoas. Can the federal government “properly” implement such a project? Questions remain such as: What type of agency could carry out the planning and management of a large interbasin project in a way that would be economically efficient from the nation’s viewpoint and agreeable to the many states physically affected?⁴¹ How would such projects be financed?⁴²

The size factor of large-scale projects presents another problem: their ultimate decommissioning. This can also result in environmental impacts. Actually, the three attributes of large-scale projects, size, components’ indivisibility, and lifespan, contribute to the “decommissioning” issue. For example, regarding this kind of impact in the Gisborne project’s EIS⁴³, the proponents argued that:

Impacts on Gisborne Lake and Southwest Brook water quantity are deemed negligible during construction. Impacts will be positive during decommissioning because withdrawals will cease. During the operation, impacts on water quantity are deemed local (*i.e.*, lake or brook proper), major (>10%), and long term (> 5 years’ duration) and thus

⁴⁰The explanation of the Secretary of Water Resource of the National Integration Ministry, Romulo Macedo, *ibid.*

⁴¹The project has been planned by the National Integration Ministry; however, such a complex project requires the participation of other fields such as environmental agencies.

⁴²Paraphrasing Charles W. Howe and K. William Easter, *supra* note 25, at 5.

⁴³EIS, *supra* note 33, at 55

considered significant. It should be noted that while impacts on water quantity are significant, impacts on other resources and resource users are **not necessarily significant** (see subsequent sections). The impact will be removed by decommissioning and thus it is not an irreversible impact.⁴⁴

However, Environment Canada responded that:

The lifespan of the project is uncertain in the EIS. The TOR states that the project is considered to be indefinite, while in the EIS, it is stated that the estimated lifetime of the project is 30 years. If the projected lifetime of the project is considered indefinite, then the prediction in the EIS that after decommissioning project impacts will be reversed should be clarified.⁴⁵

The proponent tried to clarify, arguing that: "The life-span of the project is now considered indefinite and thus any potential long term impacts are therefore not considered to be reversible. Also, because the project life is now considered to be in perpetuity, there will be no decommissioning phase."⁴⁶ However this "perpetuity" established by the proponent did not solve any environmental problems, because in one way or another they still have environmental impacts. While a perpetual project avoids decommission impacts, those and other impacts on water quality remain.

The indivisible nature of the component parts of the large-scale water system, such as reservoirs, transport facilities (canals, aqueducts, tunnels, piping) involves high capital costs in their construction. That is, these components "would rationally be built with a greater capacity than

⁴⁴*EIS, ibid.*

⁴⁵*EIS/Addendum, supra* note 33, at 20.

needed at the beginning of the project, thus very large commitments of capital must be made.”⁴⁷ There is “a cost disadvantage relative to alternative⁴⁸ sources of supply unless the storage and transport facilities can be fit into a larger system’s plan which will permit fuller utilization early in the life of the project.”⁴⁹

Sometimes, the possibility of building extra future capacity is not clearly defined at the beginning of projects and as such, an evaluation of environmental impacts can be incomplete. In the Gisborne project, the EIS established that in this proponent system operation: “The tanker/container ships will alternate. Smaller tanker ships (250,000 DWT) will be used at early state of operations (first 5 years) and then larger tankers (500,000 DWT) will be used in the future (year 5 and beyond).”⁵⁰ As a result of this information, Environment Canada requested the proponent to clarify a contradiction related to system capacity.⁵¹ Certainly the extra and undefined capacity of such large-scale water projects creates proportional effects, which are virtually impossible to identify in the EIS.

⁴⁶EIS/Addendum, *ibid.*, at 21.

⁴⁷EIS/Addendum, *ibid.*, at 5.

⁴⁸See, water transfer alternative discussion in item 2 of this chapter.

⁴⁹EIS/Addendum, *supra* note 33, at 5.

⁵⁰EIS, *supra* note 33, at 31.

⁵¹The Proponent indicates that after the first five years of operation, the facility will be receiving tankers up to 500,000 DWT. It is understood that the proposed marine terminal is being designed to accommodate a maximum tanker size of 300 000 DWT. The Proponent should explain this discrepancy or provide details of future planned expansion. There is no information regarding the type of vessels to be used to transport the water to world markets. The proponent must provide information regarding the type of vessels including whether double hulled, if they have segregated ballasts, etc. In addition, the Proponent must provide information regarding the shore-based oily waste from the vessels). If oily waste reception facilities are not proposed, the Proponent must indicate where the waste will be disposed, EIS/Addendum, *supra* note 33, at 9.

Another large-scale water project characteristic is its “long-life,”⁵² which can create “a lack of flexibility in incorporating technological innovations”⁵³ in their system. As systems age, projects will have higher costs even if they renew their technology when renewal is possible, because to remove system components is physically difficult. In other words, “in general, long-life means greater uncertainty- economic, technological, and ecological.”⁵⁴

The legal problem is not only to define a closed concept of “large-scale” regarding quantity but also to consider any other measure that causes adverse ecological effects,⁵⁵ such as in Manitoba’s BWR legislation. This consideration can become the basis for deciding whether or not to give permission for water removal. Therefore, there is a crucial need to establish a legislative framework governing all water transfers, and in particular to assess the environmental effects of both small and large-scale water transfer projects.

1.2. “Removal”

The *Manitoba Water Resources Conservation and Protection Act* relates removal of water to “transfer” of water, in Section (1): “removal

⁵²“Current calculations of benefits and costs are typically based on an expectation of 100-year life”. EIS/Addendum, *ibid.*, note 33, at 5.

⁵³EIS/Addendum, *ibid.*, at 5. In terms of comparison, “a de-salting plant or a water reclamation system with an economic life of twenty or thirty years may be disassembled and replaced by new equipment if technological improvements warrant such a change. but once the storage and transport facilities of a transfer system are in place, it becomes physically difficult to remove the structures and probably impossible to regenerate the natural ecosystems of the reservoir areas,” *ibid.*, at 5.

⁵⁴EIS/Addendum, *ibid.*, at 5.

⁵⁵See, BWR relations with quantity and quality water aspects in item 2 of this chapter.

from” relates to water in a sub-water basin and **includes transferring** that water between sub-water basins.

The *Alberta Water Act* uses the word “transfer” instead of “removal” in its sections regarding BWR: “No licences to transfer water outside Canada”(S. 46) and “No transfer between basins”(S. 47).⁵⁶

The *British Columbia Water Protection Act*⁵⁷ establishes in S. 4 that “...no licence, approval or permit under the Water Act confers any right:”

- (a) to drill for, divert, extract, use or store water **for removal** from British Columbia,
- (b) to dispose of or sell water to a person **for removal** from British Columbia,
- (c) to convey or transport water **for removal** from British Columbia,
- (d) **to remove** water from British Columbia, or
- (e) of property in respect of water **removed or intended to be removed** from British Columbia.

But there is no definition of “removal”, only the fact that it is not allowed and that an intention for removal is considered to be within British Columbia’s rules. Perhaps because of this open description it is not opportune to define “removal”⁵⁸, only to understand that all actions or even intentions to take water out of British Columbia are not allowed.

⁵⁶*Supra* note 19. Moreover, the *Alberta Water Act* does not explicitly define “removal” but includes it in the concept of “diversion of water,” S. 1:

(1) (n) “diversion of water” means (i)the impoundment, storage, consumption, taking or removal of water for any purpose, except the taking or removal for the sole purpose of removing an ice jam, drainage, flood control, erosion control or channel realignment (emphases added). That means, since any removal of water is a diversion of water, BWR is also a diversion of water.

⁵⁷*Ibid.*, [emphasis added].

⁵⁸*Ibid.*: the *Newfoundland Water Resources Protection Act* also does not define “removal” but establishes that “[A] person shall not remove water from the province”, S.

Therefore, a permission water system can consider as “removal”, all water that is transferred, translated, transmitted, transported, transposed, conducted, moved, taken from, extracted, or removed from its basin of origin. That is, it does not matter which verb the law uses to express “removal “ of water because that noun identifies an “unnatural” relocation of water out of its basin of origin, which means that BWR occurs. However, water statutes do not regulate the receiving of water from other sources into a different basin, for instance, a project such as the Garrison Diversion in which water would be transferred from the Missouri River Drainage Basin to the Hudson Bay Drainage Basin. To remove as well as to receive water from distinct river basins should be considered by water laws as potentially damaging to aquatic ecosystems.

1.3. “Water”

Water has been clearly understood as all surface and ground water, in any of its forms, liquid, solid or gas, by both systems, Canadian and Brazilian.

4. That is, this act applies the same terminology that the federal BWR program does. The *Ontario Water Transfer Control Act* applies this same legislative technique. It only determines the word without defining it but it does use the phrase “transfer water out of “ instead of “removal”, S. 2. Similarly, “transfer” is applied in the *Quebec Water Resources Preservation Act*: “...no water taken in Quebec may be transferred ...”, S. 2. The *Nova Scotia Water Resources Protection Act*, like the British Columbia act, establishes a list of acts prohibiting “removal” of water, in S. (4) “...no person shall: (a) drill for, divert, extract, take or store water for removal; (b) sell or otherwise dispose of water to a person for removal; (c) convey or transport water for removal; or (d) remove water, from the portion of the Atlantic Drainage Basin that is located within the Province”.

In the Brazilian system, water is classified⁵⁹ by differing criteria such as:

(1) Regarding water's localization in the ground: a) ground water is water located at a certain depth in the subsoil; and, b) surface water is water located "on" the surface of the earth. This classification allows a sub-classification: internal surface (rivers, lakes, seas), and external surface (territorial sea, high sea).⁶⁰

(2) Regarding water's predominant use: briny, salty, and freshwater.⁶¹

In the same way, the Canadian system establishes the concept of water; for example, "water" means all surface water or ground water, whether in liquid or solid form: *Manitoba Water Resources Conservation and Protection Act and Consequential Amendments Act*, Section (1)

⁵⁹C.A.Pacheco Fiorillo and M. Abelha Rodrigues, *Manual de Direito Ambiental e Legislação Aplicável* (Sao Paulo: Max Limond, 1997), at 272, translation by Sandra Cilce De Aquino. There is no legal definition of water, but for this doctrinal concept and the National Council of Environment's classification in resolution number 20/86 (Conselho Nacional do Meio Ambiente/CONAMA 20/86) see Fiorillo, *ibid*, at 272-274.

⁶⁰However, Alastair R. Lucas has pointed out the distinctness of "percolating water", which "differs from water that flows in defined surface or underground channels. Percolating water is subject to a separate category of the common law, based on the rule of pre-emptive appropriation- or 'capture' ", in *Security of Title in Canadian Water Rights* (Calgary: The Canadian Institute of Resource Law, 1990), at 8. Moreover, "the distinction between flowing water, and percolating surface and underground water, which was originally based on lack of knowledge about groundwater hydrology, has also caused difficulties", at 1 in note 2, "difficulties" regarding the categorisation of water as "property rights". He pointed out that water "has never fitted comfortably into the traditional categories of property rights," *ibid*. at 1. The discussion related to water and property rights and to the concept of water rights comes next in Chapter 2.

⁶¹It is classified according to a resolution of the National Council of Environment (Conselho Nacional do Meio Ambiente/CONAMA), number 20/86, see Fiorillo, *supra* note 59, at 272-274. The resolution 274/00, which was published 29 November 2000 up dates the number 20/86.

Definition.⁶² Furthermore, most BWR statutes⁶³ also define water with this same meaning such as the Alberta *Water Act*, Section 1(ggg).⁶⁴ “water” means all water on or under the surface of the ground, whether in liquid or solid state.

Applying both water concepts, Brazilian and Canadian, in the BWR definition, “large-scale removal of water” must be clearly understood as all surface and (or) ground water, and in any of its forms, liquid, solid or gas. At no point in Canadian legislation is a chemical definition offered (*i.e.*, “H₂O”): for the law, “water” is water. It is an operative word that not only can define the BWR as an extraction of surface and/or ground water, but can also define the jurisdiction where the competence of freshwater and salt water is different. That is, it is under provincial jurisdiction. Moreover, in Brazil, groundwater is exclusively a state competence,⁶⁵ while surface water depends on its localisation and ownership, federal or state.

⁶²*Manitoba Water Resources Conservation and Protection Act and Consequential Amendments Act*, *supra* note 19.

⁶³(1)“water” means all water located in or derived from water basins within the province: *Newfoundland Water Resources Protection Act*, Section 2 (a); (2) “water” means natural surface and ground water in liquid, gaseous or solid state, but does not include spring or mineral water bottled as a beverage for human consumption : *Ontario Water Transfer Control Act*, Section 1.1. (1); and, (3) “water” means all surface water or groundwater and, for greater certainty, includes water in the form of ice: *Nova Scotia Water Resources Protection Act*, Section 1 (c), *supra* note 19.

⁶⁴Also in Alta. Reg. 205/98, Interpretation S 1(1): (bb)“surface water means all water on the ground surface, whether in liquid or solid state,” *supra* note 19.

⁶⁵Although the federal constitution establishes a state jurisdiction under groundwater. Article 26, *infra* note 150, there is still room for understanding: see, Cid Tomanik Pompeu, “Águas Doces no Direito Brasileiro”, in *Águas Doces no Brasil*, edited by Aldo Rebouças de Cunha and others (Sao Paulo: Ed. Escrituras, 1999), at 614.

Therefore, BWR management can be under both jurisdictions, federal and state.⁶⁶

1.4. “Man-made diversion”

Man-made diversion, “such as canals, tankers ships or trucks, or pipelines,”⁶⁷ gives a partly exemplary list, and it is possible that new man-made diversions could continually be invented. This list allows legal prohibition to any invention of diversions that can remove, transfer or take out water. That means that a “man-made diversion” is an open legal concept.

Manitoba as well as British Columbia, Newfoundland, Quebec and Nova Scotia define neither “man-made diversion” nor “any way”. They just establish “removal of water from”, which means that the law does not consider by what “means”.⁶⁸ So, any means for removal of water can be considered. To transfer or remove water “by any means” is established in the Alberta and Ontario legislation.

However, in practice, there are different effects⁶⁹ from each type of diversion that the law should consider. For instance, there are effects such as those from the indivisible nature of reservoirs and canals and from other man-made mechanisms. Bocking noted, “tanker export raises serious

⁶⁶The jurisdictional issues are explained in Chapter Two, item 1.2.

⁶⁷*Supra* note 2.

⁶⁸Respective acts. *supra* note 19.

⁶⁹Such as ecological and economic effects; for respective examples, see Bocking *supra* note 30, at 283, and Charles Birt, “Infrastructural Requirements for Bulk Water Export by Tankers”, in *Water Export: Should Canada's Water Be for Sale?* *Supra* note 24, at 45-56.

questions about water rights and the impact of withdrawals on coastal estuaries.”⁷⁰ Using the B.C. region as an example, he pointed out “there are enormous tides in coastal inlets such as Toba, creating turbulent currents at their outlets. The huge tankers proposed for water exports would wend their way through tortuous waterways, manoeuvring around islands and reefs in an area where no well-developed marine traffic management system exists.”⁷¹ Moreover, these estuaries have a rich life in their “water and shore supporting a vast range of plant and animal species. These productive waters support an important commercial and sports fishery while spawning for almost the entire commercial oyster industry of coastal British Columbia is located in the area.”⁷² He emphasised the high level of risk in water exports by tankers, and stressed that one accident would be enough for a catastrophe.⁷³

Project-by-project each different “man-made diversion” has to be assessed regarding its distinct impacts, when considering the means that could lessen such impacts relative to the environment.

⁷⁰Bocking, *ibid.*, at 283.

⁷¹*Ibid.*

⁷²*Ibid.*

⁷³*Ibid.* Moreover, there are other consequences from imposing a regular traffic of tankers in “these dangerously constricted but incredibly rich and beautiful waterways. Though the ships would transport water and not oil, their enormous fuel tanks are full of bunker C fuel, the worst possible grade of oil in environmental terms. Currents, winds, rocks and reefs would intersect with the tight ship schedules essential for profit. The stage is set for tragedy on a grand scale. Nature would require a very long time to

1.5. "Exported"

All BWR statutes use the word "export", "exported" or their synonyms. Yet, regarding BWR, there is no doubt that "exported" means **to take out from the basin of origin**, and not only "export" country to country. This definition is self-explained by the words of its text: "[I]t is *not necessarily exported* out of the province or country *but it is "exported" from its basin of origin*".⁷⁴

BWR is legally understood as a "water export;" however it is not only as an inter-frontiers transference, but also as intra-boundaries transference. *Manitoba Water Resources Conservation and Protection Act* prohibits a removal of water "...**from a water basin or sub-water basin**" (S.2).⁷⁵ If BWR occurs it is a water transference from an original basin to anywhere, within or out of province.

Therefore, the legal issue here related to BWR is that it is a kind of "water export" which can be under both federal and provincial jurisdictions, because BWR can occur as different kinds of "export": intra-

cleanse herself of spilled bunker C fuel oil. since water circulation and wave action is much less than that of coastlines exposed to the open ocean".

⁷⁴Federal Canada Policy BWR's concept, *supra* note 2, [emphasis added].

⁷⁵*Supra* note 19 [emphases added]; *Alberta Water Act* prohibits a transfer of "...water from the Province outside of Canada", S. 46(2), and a "...transfer of water between major river basins in the Province", S. 47. *British Columbia Water Protection Act* prohibits a removal of water "...from British Columbia"(S. 5). and transfer of water "...between major watersheds"(S. 6). However, Newfoundland, Ontario, Quebec and Nova Scotia's BWR rules are not clear enough regarding transference of water within the province: *Newfoundland Water Resource Protection Act* prohibits removal of water "...from the province" (S. 4). *Ontario Water Transfer Control Act* prohibits "...transfer of water out of a provincial drainage basin" (S. 2). *Quebec Water Resources Preservation Act* prohibits water to "...be transferred outside Quebec" (S. 2). *Nova Scotia Water Resources Protection Act* prohibits a removal of water "...from the portion

provincial, inter-provincial, inter-national. As a result, it can be a polemic issue between provincial and federal levels of Canadian governments, regarding international agreements under environmental and trade issues. For instance, can the Canadian provincial BWR regulations “influence” or pre-empt the water export rules of NAFTA? Could water be exported from B.C. where there is a BWR moratorium to the U.S.A. on NAFTA rules? Furthermore, can an intra or inter-provincial transfer, which is a type of “water export, be a precedent for opening “international water export”?⁷⁶

1.6. “Basin of origin”

A basin of origin is the first locale of the water, the primitive place where the water originated. Most water laws do not define what an original basin is but they indicate where specified basins are⁷⁷; for example, the

of the Atlantic Drainage Basin that is located within the Province” (S.4). *ibid.* [emphases added].

⁷⁶These issues are in Chapter Three.

⁷⁷*Supra* note 19 [emphases added], the *British Columbia Water Protection Act*, S. (1): “major watershed” means any of the following 9 regions: (1) the Fraser Watershed, comprising the area that drains into the Fraser River and its tributaries; (2) the Mackenzie Watershed, comprising the area that drains into the Mackenzie River and its tributaries; (3) the Columbia Watershed, comprising the area that drains into the Columbia River and its tributaries; (4) the Skeena Watershed, comprising the area that drains into the Skeena River and its tributaries; (5) the Nass Watershed, comprising the area that drains into the Nass Watershed and its tributaries; (6) the Stikine Watershed, comprising the area that drains into the Stikine Watershed and its tributaries; (7) the Taku Watershed, comprising the area that drains into the Taku Watershed and its tributaries; (8) the Yukon Watershed, comprising the area that drains into the Yukon Watershed and its tributaries; and (9) the Coastal Watershed, comprising the rest of British Columbia. The *Ontario Water Transfer Control Act*, S. 1. (2), “...[O]ntario is divided into four provincial drainage basins as follows”: (1) Lake Ontario, Lake Erie, Lake Huron, Lake Superior and the St. Lawrence River and the part of Ontario the water of which drains into any of them; (2) The Ottawa River and the part of Ontario the water of which drains into it; (3) The part of Ontario the water of which drains into the Nelson River; (4) The part of Ontario the water of which drains into Hudson Bay or James Bay. However, O. Reg 285/99 on Section 3 (1) divides Ontario into three water basins. The *Nova Scotia Water Resources Protection Act*⁷⁷ establishes in Section 2 (a)

Manitoba Water Resources Conservation and Protection Act, Section (1)

recognises that “**water basin**” means the **Manitoba** portion of the Hudson

Bay drainage basin. While, in Section 1, *Alberta Water Act*⁷⁸ establishes:

- (1) (gg) “**major river basin**”⁷⁹ means
- (i) the Peace/Slave River Basin,
 - (ii) the Athabasca River Basin,
 - (iii) the North Saskatchewan River Basin,
 - (iv) the South Saskatchewan River Basin,
 - (v) the Milk River Basin,
 - (vi) the Beaver River Basin, and
 - (vii) the Hay River Basin, with boundaries as specified in the regulations.⁸⁰

On the other hand, the *Quebec Water Resources Preservation Act*⁸¹ simply establishes “...no water taken in Quebec...” S. 2, without identifying any original basin other than the whole of Quebec.

Therefore, the basin of origin is that place where the water originated. A province has discretion to establish itself as a basin (the whole province), major basins (different provincial regions as distinct basins) and even as sub-basins (subdivisions within the major basins). Moreover, water laws and policies have adopted the river basin approach as a territorial unit for water management.⁸²

that “Atlantic Drainage Basin” means the geographical area that drains into the Atlantic Ocean and, for greater certainty, includes all of the Province.

⁷⁸*Ibid.* [emphasis added].

⁷⁹For more information about Alberta’s River Basins see: Alberta Environment, *Alberta’s River Basins* (Alberta Environment: Water, 2000) on line <<http://www.gov.ab.ca/env/water>> (last update: 20 June 2000).

⁸⁰Alta. Reg. 205/98 establishes in Part 2 Diversion and Transfers, Section 10 (1), Major river basin boundaries, *supra* note 19.

⁸¹*Ibid.*

⁸²The river basin management approach and its implications are studied in the Chapter Two, item 1.2, and Chapter Six.

Thus, these operative words “large-scale”, “removal”, “water”, “man-made diversion”, “exported” and “basin of origin” are fundamental to the BWR concept and to accurate interpretation of statutory laws and their applications. However the BWR concept should focus on its effects and not only on a “closed” definition of the certain water quantity to be transferred. Even a small-scale water transfer can have serious impacts. The environmental impact assessment is necessary for water transference projects, independent of the quantity to be removed. Furthermore, like any other water use, BWR involves conflicts of interests because of the diversity of “choices” and “needs” in water utilisation.⁸³ As said a few decades ago:

Large-scale water development projects have been receiving increasing publicity and public attention in the past few years. The Northeastern drought of 1963 through 1966 and assertions of impending water crises in the Southwestern United States have attracted widespread attention to the very uneven distribution of the water resource, both geographically and through time. One type of prescription for alleviating these conditions has been the large-scale transfer of water from one river basin to another, from one region of the country to another, or even from one part of

⁸³In Canada, regarding the interbasin debate, David R. Percy noted that “the possibility of inter-basin transfers is in the air again on the Canadian prairies. The diversion of water from the abundant supplies of the northern portion of the region to the parched south is raised from time to time, especially in Alberta. In the seventies, Manitoba carried out, for the purpose of generating hydro-electricity, the major Churchill River Diversion, which has been the focus of much attention at this Symposium. In the recent past, the Garrison Project created the possibility of an inter-basin transfer with major international implications;” *supra* note 4, at 452. About Canada’s water export discussion, Frank Quinn noted it “is almost 3 decades old and shows no sign of ending”, *supra* note 26, at 111. Yet, regarding Canada’s water export, Anthony Scott stressed that “the ‘debate’ is quite static and devoid of research”, in “International Water Marketing: Nations, Agencies or Individuals”, *Water Export: Should Canada’s Water Be For Sale?*, *supra* note 24, at 141. In Brazil, for instance, there is a water transposition project, the Sao Francisco River Transposition *supra* note 39, has been considered for almost 150 years (since 1852) but it has never been implemented.

the North American continent to other distant parts. The public advocacy of these transfers by various groups and the rebuttal provided by others have frequently clouded basic questions that need to be asked and answered if water transfers are to receive the unbiased and informed evaluation required for wise policy formulation.⁸⁴

The necessity for clarity in the frequent questions raised about water transfers ultimately comes from the aim to control, monitor, and assess water allocation properly. Therefore, the next chapter analyses the opportunities and problems for BWR, findings that will help to clarify such “clouded basic questions”.

2. Bulk Water Removal as a Mechanism for Water Allocation: Opportunities and Problems

Water use is basically withdrawal and instream use. Most water uses related to bulk water removals are withdrawal uses. This occurs on the land as water withdrawn, piped or channelled water from its source to different locations and users. Withdrawal use is measurable as quantities of intake, discharge and consumption such as in household, industrial, power generation, irrigation, livestock watering, and mining.⁸⁵

The purpose of most water removals is to provide water both for “the replacement of water supplies that are being exhausted or degraded” and for the expansion of economic development activities such as

⁸⁴Charles W. Howe and K. William Easter. *supra* note 25, at 1.

⁸⁵“Unlike withdrawal uses, instream uses cannot be measured quantitatively because the water is not removed from its natural environment. Instead, instream uses are described by certain characteristics of the water or by the benefits they provide to us and the ecosystem”. in Environment Canada: Fresh Water: FS A-4:

agricultural irrigation⁸⁶ and hydro-electricity.⁸⁷ As in Canada,⁸⁸ the few Brazilian water projects related to water transfers have been for energy generation.⁸⁹ Moreover, "the use of water as an energetic potential is one of the main forms of its non-consumptive use and in Brazil it presents itself as of the highest relevance since nearly 92% of the production of electric energy is of hydraulic origin."⁹⁰ Even though energy generation is a non-consumptive use of water, it still has environmental effects. However each water transfer project can have different purposes including non-consumptive and consumptive uses of water; for instance, in the Gisborne's

http://www.ec.gc.ca/water/en/info/pulso/FS/e_FSA4. One thinks of freshwater fisheries, wildlife, recreation, waste disposal, and hydroelectric power generation.

⁸⁶Charles W. Howe and K. William Easter. *supra* note 25, at 56.

⁸⁷David Percy. "The Institutional Creation of Water Shortages on the Canadian Plains" *supra* note 4, at 452. Comparing Canadian and American hydro-electric situations. J.C. Day and Frank Quinn noted that "among the various uses, hydroelectric power dominates overwhelmingly in number and scale of diversions. Irrigation, flood control and municipal uses assume importance only regionally or locally. With approximately two-thirds of our electrical energy generated by falling water and 96 percent of total water diversion attributable to hydro-electric projects, Canada is still very much hydro country. This is in marked contrast to the United States where, of the largest diversions reviewed, water supply for municipal and irrigation purposes dominates and hydro is hardly represented. In the American West hydropower is mostly a byproduct which helps to finance water projects intended to serve other purposes; in Canada, it is the main and usually only purpose of diversion projects", "Dams and Diversions: Learning from Canadian Experience", *Proceedings of the Symposium on Interbasin Transfer of Water: Impacts and Research Needs for Canada*, *supra* note 4, at 45.

⁸⁸David Percy, *ibid.* except for Alberta, which has been for irrigation. Regarding Alberta. "eight of the province's nine identified water transfers are located within the Bow and Oldman Basins of southern Alberta; six are operated for irrigation districts. Irrigation historically has been the driving force behind water redistribution within the region. Most irrigation water is consumed, that is, does not return to any stream for subsequent use. The continued expansion of irrigation and of associated economic activities is threatened by the limits of water availability; indeed, rationing of delivery has been enforced during recent drought," Frank Quinn, "Water Transfers: Canadian Style", *Canadian Water Resources Journal*, Vol. 6, N 1, 1981, at 72. This article presented a descriptive overview of water transfers in Canada.

⁸⁹Joao Alves Filho. *supra* note 39.

⁹⁰*Brief Report on Water Resources in Brazil*, Ministry of Environment, Water Resources National Information System, on line <<http://200.252.222.100/NOTICIAS/abrief.htm>> last up date November 2000.

project⁹¹ it was to bottle and export water. Snowcap's (Sunbelt)⁹² was an industrial scale proposal for marine transported bulk water exports. Both kinds of water uses, non-consumptive and consumptive, for development of economic activities or new water supplies can have environmental as well as social impacts. Sao Francisco River Transposition had different purposes in its historical list of plans; for instance, in the past it was to expand irrigation areas in the Northeast of Brazil.⁹³ Irrigation has been expanded in the Northeast of Brazil by public projects with high costs for financing and without environmental considerations. Nowadays the National Integration Minister has argued that the Sao Francisco River Transposition's aim is to have a "water supply for multiple uses"⁹⁴ in the Northeast region. Perhaps, if this project would provide multiple uses of water in an equal distribution among the users, it might be worth more than an exclusive purpose project such as irrigation and energy production projects.

Besides any of these exclusive major purposes of a water transfer, there are several other water uses, which need to be considered in BWR

⁹¹*Supra* note 33.

⁹²*Infra* note 121.

⁹³"The cost of expanding irrigation through new water projects – building dams, reservoirs, canals, and distribution channels- has risen greatly in many countries, making such schemes harder to finance. Today, capital costs for new irrigation capacity run between \$ 1,500 and \$ 4, 000 per hectare for large projects in China, India, Indonesia, Pakistan, the Philippines, and Thailand. They climb toward \$ 6,000 per hectare for public projects in Brazil....," Sandra Postel, *Last Oasis: Facing Water Scarcity*, The Worldwatch Environmental Alert Series, Linda Starke, Series Editor. (New York: W.W. Norton & Company, 1992), at 52.

project implementation. Along with social and ecological aspects, there are aesthetic and environmental water applications at risk by BWR projects. Water uses and environmental aspects to be considered in BWR are not only directly related to each project's purposes but also to those that can be indirectly identified project by project, also those distinct consequences from consumptive and non-consumptive water uses. BWR is directly associated with water quantity, as well as water quality and environmental aspects. However, large-scale interbasin water transfer projects have most commonly appeared among the proposed solutions for water quantity problems.⁹⁵ That is, most of these projects are from "surplus" to "deficit" areas. In addition, Bocking argued "moving water from the area of surplus to the area of shortage is promoted as the simplest solution to an obvious problem. The fact that there may be a great deal of money to be made by

⁹⁴Fernando Bezzara e Romulo Macedo, *supra* note 39. However, the water projects implemented in some parts of Northeast Brazil serve energy generation and irrigation of *latifundium* instead of small irrigation and/or domestic uses.

⁹⁵W. Howe and K. William Easter, *supra* note 25, at 4. They showed that a water transfer project has been done "particularly but not exclusively in connection with the water quantity problems of the West". "Whether these solutions over a longer period of time may be a matter for debate, but one point is clear: the West cannot maintain a rapid rate of economic growth without devising better ways of utilizing its present water resources or importing new supplies, and the East cannot continue to contaminate its water environment without serious impact on the quality of living." Yet, regarding supply/demand views, Ehor Boyanowsky stressed that "alienation of water resources to the U.S. could promote strong reactions on the part of Canadians. Civil disobedience and even terrorism might result especially if Canadians perceived that water exports to the U.S. were a threat to national sovereignty", in "Water Wars: Public Response to Environment Threat", in *Water Export: Should Canada's Water Be for Sale? Supra* note 24, at 269. So, besides water quantity issues there are neither quality water precautions nor conservation uses being raised in the surplus/deficit debate. As noted by David Percy, "the diversion of water from the abundant supplies of the northern portion of the region to the parched south is raised from time to time, especially in Alberta." "The Institutional Creation of Water Shortages on the Canadian Plains," *supra* note 4, at 452.

those involved in the process keeps the issue alive.”⁹⁶ Moreover, there is no shortage of water but a shortage of cheap water, which is “a different issue requiring totally different responses.”⁹⁷ It is necessary, first, to explore other alternatives, especially environmental ones, and then to make a wise decision about the water transfer.⁹⁸

Quantity and quality are inherently connected and, as Andrew Thompson has pointed out, “possibly the most damaging aspect of past water policy has been the practice of separating water quality from water quantity. This unnatural division probably stems from administrative imperatives rather than policy ones.”⁹⁹ Thus, a water allocation system has to consider both quality and quantity aspects of water in each water project to be licensed. While most administrations do not consider the water quality and quantity connection, this relationship was one concern of the Newfoundland Environment and Labour Department in its *Guidelines for Preparation of the Terms of Reference for the Gisborne Lake Water Export (McCurdy Group) Proposal*.¹⁰⁰ This case considered water quality regarding fish impacts, and instream flow needs, as well as environmental

⁹⁶Richard C. Bocking, *supra* note 30, at 277. In this paper he addressed “the questions of whether a shortage of water in fact exists in the U.S., whether there is a surplus in Canada, the environmental impacts of proposed water export projects, and the implications of all this for water policy in Canada.”

⁹⁷*Ibid.*: at 277

⁹⁸Garry Fritz’s considerations regarding water exportation include the need for analysing: 1) the availability of alternative sources of water in the importer’s region; 2) the current supply of the host region’s water; and, 3) the future demands of water users in the host region, *supra* note 24, at 60.

⁹⁹Andrew Thompson, “Impediments to Water Export in the Aftershock of Free Trade”, in *Water Export: Should Canada’s Water Be for Sale?*, *supra* note 24, at 138.

¹⁰⁰*Supra* note 33.

aspects, such as resource conflicts and the wildlife perspective. For instance, the Department of Fisheries and Oceans inquired about the “potential conflicts” and “impacts” with commercial fisheries.¹⁰¹ As an answer, the proponent argued that:

There is some potential for conflict between the wharf facilities, tanker operations, and commercial fishing operations. Any conflicts will be resolved by avoidance, procedural changes, and compensation, where necessary,

And,

A code of conduct between Project vessels and fishing vessels will be established in cooperation between the Proponent and the fishers. Any proven, documented losses incurred to commercial fishermen attributed to the Project will be compensated by the Project. Losses, if they occur, could be due to tankers damaging or displacing fixed fishing gear. The compensation can presumably reduce the economic losses to negligible status.¹⁰²

¹⁰¹ EIS/Addendum, *supra* note 33, at 48.

¹⁰² *Ibid.*, at 48-49. Freshwater fish and fish habitats are other examples of activities to be considered in BWR projects. In the impact assessment section of the Gisborne project's EIS, the proponent presented a brief summary of “fish habitat” for three distinct areas of watershed (Gisborne Lake and associated feeder tributaries, Southwest Brook above the second waterfalls [Barrier 2], and Southwest Brook below the second waterfalls [Barrier 2], *supra* note 33, at 61) and stated that control of the flow would be maintained, *Ibid.*, at 62. However, the Newfoundland governmental agencies were not satisfied with the proponent's statements, in the following commentaries: 1-Freshwater fish habitat within the study area has not been adequately described and/or quantified... This type of information is required to determine whether the proposed undertaking will result in the harmful alteration, disruption, or destruction of fish habitat...; 2-Minimum flow requirements, necessary to maintain productive fish habitat and mitigate project related impacts have not been identified; and, 3-The EIS states that ‘water levels will not normally differ from the normal high or low water marks....’ More attention should be paid to extreme events and particularly low flow events, EIS/Addendum, the Department of Fisheries and Oceans' commentaries, *supra* note 33, respectively at 5, at 10 and at 31. The proponent clarified that extreme events will be considered, and that “water levels will be continuously monitored and water quality regularly monitored,” *ibid.*

Thus, water quality impacts such as fish habitat impacts are potential damages connected with any water transfer projects. Certainly these impacts need to be compensated. Commercial fisheries compensation is an example of one of the compensations that can result from water transfer. As Percy noted:

A major inter-basin transfer is almost certain to interfere with vested rights in the region of origin and to create legal problems in the region whose water supply is to be augmented. As a result, the legal implications of any project must be preceded by careful legal groundwork, especially in respect of its effect on existing rights.¹⁰³

The variability of water project impacts, project by project, is noted in the case law: *Edward C. Shokal v. Kenneth Dunn*,¹⁰⁴ which explained that

of course, not every appropriation will impact every one of the above elements. Nor will the elements have equal weight in every situation. The relevant elements and their relative weights will vary with local needs, circumstances, and interests. For example, in an area heavily dependent on recreation and tourism or specifically devoted to preservation in its natural state, Water Resources may give great consideration to the aesthetic and environmental ramifications of granting a permit which calls for substantial modification of the landscape or the stream.¹⁰⁵

Fisheries, recreation and tourism activities are just as marketable water uses as energy production and irrigation but they are often in the list

¹⁰³David Percy, "The Institutional Creation of Water Shortages on the Canadian Plains". *supra* note 4, at 452.

¹⁰⁴*Edward C. Shokal v. Kenneth Dunn (Idaho)* 707 P 22 441

¹⁰⁵*Ibid.*, [47] at 450 [emphasis added]. The above elements are public interest elements such as assuring minimum stream flows, discouraging waste, and encouraging conservation: *ibid.*, [44] at 449.

of BWR potential damage and not considered. Certainly water uses for purposes such as energy production, or generally for industry or for irrigation, have strong economic considerations. On the other hand, what great economic returns exist for water uses that are related merely to human and wildlife uses, and their health and ecological aspects? There will always be a dispute in establishing priorities for each of these interests in water allocation.¹⁰⁶ How and who decides which is the preferable water use?¹⁰⁷ Which criteria are the bases for deciding this priority?

As Scott explained,

any solution to the problem of allocating water between unmarketed (environmental) uses and priced industrial uses requires that each use of water in each place be valued by a decision-maker in some common unit. This is true for decision-makers in government, markets or within individual water-using units. Otherwise the currently favoured uses will eventually capture all the water.¹⁰⁸

A possible solution in the Gisborne project would involve the co-operative action between the proponent and the fishers as the Environmental Department suggested. Unfortunately, most of the analysis of water transfer projects considers the economic aspects but too often

¹⁰⁶David Percy noted that "in areas where there is considerable pressure on water supply. ...normally, uses of water for domestic, farm and fire-protection purposes are considered most important, followed by municipal uses and then uses for industrial, commercial, and irrigation purposes. The evaluation can also include ecological and recreational factors." *The Framework of Water Rights Legislation in Canada*, *supra* note 4, at 78. More than the dispute for water, there are water uses and water rights conflicts: for such examples see Alastair R. Lucas, *supra* note 60, in the Chapter 4: Alberta Case Studies.

¹⁰⁷Some water laws establish a list of priorities regarding water uses: Percy, *The Framework of Water Rights Legislation in Canada*, *supra* note 4.

¹⁰⁸Anthony Scott, *supra* note 83, at 143. Regarding decision-makers in a free-market environmental system, perhaps the market can solve water uses problems however it cannot solve water rights conflicts by itself.

denies environmental and social ones¹⁰⁹ such as third party compensations. However, we need to research more¹¹⁰ about BWR's "acceptable" impacts where there is a lack of alternatives for water scarcity in some regions, and to believe that David Durenburger's statement¹¹¹ regarding water policy has changed. Water policy has to be not only political or economical but also include socio-ecological aspects, which are not separated from each other, or from human and natural aspects. In Canada and Brazil regarding such water use, conflicts, choices and decisions are made by the designated governmental agency¹¹² or by a judiciary when the conflicts are taken to the courts. However, there can be lack of control by the agency, and of knowledge by the courts. Commenting on the lack of "official" enforcement, Karin Kemper gave an example of water conflict in Ceara State: "eventually, however, the irrigators in the Paraipaba project took action and destroyed Agrovale's earth dam in order to let the water flow freely and to enforce their water rights. Neither DNOCS nor the state was able to solve the conflict. It had to be solved by the water users themselves."¹¹³

¹⁰⁹*Supra* note 24. at 64, Gary Fritz argued that the social and environmental impacts of water exports should be evaluated from an ecosystem perspective. These issues are developed below.

¹¹⁰But not use "scientific uncertainty" as an excuse to avoid solving BWR issues.

¹¹¹"As U.S. Senator David Durenburger has said: The first principle of water policy... is that rational thinking doesn't apply. Water is a political, not an economic commodity." Anthony Scott, *supra* note 83, at 286.

¹¹²Water is vested in federal or provincial/state jurisdictions: see Chapter Two.

¹¹³*Supra* note 1, at 145. DNOCS (Departamento Nacional de Obras Contra as Secas) is the Department of Works Against Droughts, it is the designated governmental agency to deal with related water resources in question.

Furthermore, regarding the criteria to resolve these conflicts, each water law has its principles and discretionary powers to decide¹¹⁴, even for questions about how competing resource rights should be resolved in the future.

Besides conflicts among water resources rights, there also are disputes regarding natural resource rights. As Lucas explained, “water rights may also be adversely affected by other natural resource rights. For example, the exercise of mining or oil and gas rights may limit quantities or affect the quality of groundwater extracted under licence.” Furthermore, “there are few clear answers to how questions of competing resource rights are resolved. Each case requires careful interpretation of the water statute and of the Act under which the competing rights are granted”. In addition, “there will often be no definitive answers to these interpretative questions.”¹¹⁵

In light of BWR, the size of any transfer is only one of its characteristics that, “combined with the economic growth”,¹¹⁶ has encouraged conflicts over large-scale transfers: for example, between the water importing and exporting regions and between those who would benefit from expanded, subsidized economic activities and those producers who are pushed out of the market by such new output.¹¹⁷

¹¹⁴See Chapters Five and Six.

¹¹⁵Lucas. *supra* note 60, at 54-55.

¹¹⁶Charles W. Howe and K. William Easter, *supra* note 25, at 168.

¹¹⁷*Ibid.*, paraphrased. In addition, they explained the complexity of evaluating water transfer impacts: “tracing the impacts of water importation is a difficult undertaking in

Even an economic analysis recognises the non-viability factor in water transfer projects such as BWR. Some proposed water export projects have failed because of their non-viability. For instance: the North American Water and Power Alliance (NAWAPA),¹¹⁸ the Grand Recycling and Northern Development (GRAND) Canal,¹¹⁹ Gisborne Lake Water Bottling and Export Project (Newfoundland),¹²⁰ Snowcap Water ("Sun Belt Water", British Columbia),¹²¹ Nova Group (Ontario).¹²² The list of non-accomplished projects or the list of projects planned, proposed and

part because of the complex physical relationships among water users in a hydrologic system. Externalities or downstream effects which greatly complicate the analysis of even simple steps such as changing points of water diversion along an existing stream tremendously complicate the task of computing benefits to an importing region or the opportunity costs of water diverted from an exporting region. Beyond the complexity of physical interrelationships among water users lie the market between direct water users and other parties: those who supply inputs to the water users, those who depend upon the water users for inputs, and those who compete against them for markets. An analysis of these relationships is necessary for projects as large as those currently being proposed, particularly since substantial induced unemployment and resource immobility may be connected with such projects. In the analysis of such projects, we have left the happy world of partial equilibrium analysis in which other regions can be assumed to be unaffected." *ibid.*, at 169.

¹¹⁸*Supra* note 25.

¹¹⁹*Ibid.*

¹²⁰Project's description, *supra* note 33.

¹²¹Snowcap Water Ltd. (Sun Belt Water Inc) project was an application for an additional licence of 15,000 acre-feet per annum of water from Tzela Creek for industrial purposes (marine bulk export), the previous licence was to withdraw 200 acre-feet. Snowcap and Sun Belt formed a joint venture to develop a business for the shipment of freshwater by marine tanker from B.C. to California and elsewhere. According to B.C. Environmental information, this projected application was abandoned. The following is the current project information: Registered Applicants; Reg. Number: 3; Date of Reg.: 6/21/1995; Registered under Section Number 10(1); Registrant: Snowcap Water Ltd; Reg. Status: Abandoned; Source of Water: Tzela Creek; Location of Source: Toba Inlet; Water Licence: CL 69510, on line <http://www.elp.gov.bc.ca/wat/wrs/registrd.htm> (last updated: October 30, 2000). Actually, B.C. established by its *Water Protection Act* a BWR moratorium, *supra* note 8. As a result, "Sun Belt seeks damages and declarations against the defendants because they allegedly deprived it of the opportunity to export surplus fresh water from British Columbia. Sun Belt asks for damages for negligent misrepresentation, intentional interference with contractual relations and breach of contract". in *Snowcap Waters Ltd. v. British Columbia*, 34 B.C.L.R. (3d) 139 (B.C.S.C) (Bouck J.). Other aspects of this case will be commented on below.

“re-proposed” to transfer large-scale water is not small.¹²³ Although, as commented, both small and large-scale water removals present high economic, social and ecological effects and costs. To evaluate BWR opportunities and problems, it is necessary to consider “direct benefits”; “secondary benefits” and “costs”.¹²⁴ Furthermore, the method for analysing

¹²²The Nova Group of Sault Marie was an application for a permit to sell up to 10 million litres of Lake Superior each day to Asia.

¹²³In Canada see a list of projects in Figure 1. “Water Diversions in and Affecting Canada, 1985” (Major Interbasin Diversion, and Minor Diversions), and Table 1. “Major Water Diversions and Affecting Canada, 1985”, respectively at 46 and at 47. J.C. Day and Frank Quinn, *supra* note 87. In Brazil, there are few cases of “water course reversion”, that is water moved from a river to another such as Tiete-Pinheiros Rivers Reversion in Sao Paulo, Paraiba do Sul-Guandu Reversion in Rio de Janeiro, and Piracicaba River-Sao Paulo, for some technical data see appendixes VIII, IX, X and XI in Joao Alves Filhos, *supra* note 39. Sao Francisco River Transposition’s history re-proposed several times, *supra* note 39. Furthermore, in the inventory of water removal projects, Canada appears as the largest diverter in the world. “During the past two decades, or roughly the period that the Environmental Movement was thought to have complicated the life of project builders, Canada has changed its position relative to other nations, from being a major diverter of water resources to being the largest diverter in the world.” J.C. Day and Frank Quinn, *ibid.*, at 75. This position is the result of “a very small number of very large recent diversions- the Churchill Falls Project in Labrador, the Churchill-Nelson Diversion in Manitoba, and the La Grande River (James Bay Phase I) Project in Quebec. The seven diversions included in these three projects account for two-thirds of all flow diverted in Canada,” *ibid.*, at 75.

¹²⁴“Direct benefits” may be expected to accrue major water transfers: for instance, for agricultural purposes where most of the water is provided by the proposed large-scale transfers. Any water transfer always has a direct use as its purpose; for instance, in the Gisborne’s project it was to bottle and export water. However, these direct uses are connected to “other sectors of the regional and national economy; and, as their activities expand or contract, so will the activities of those they supply or from whom they buy. The extent of these induced secondary changes and their relevance to an assessment of national benefits and costs depend very much on the circumstances of the industries and regions involved, as well as on national economic conditions,” *supra* note 25, at 48. Consequently, there are “secondary benefits” from the major water transfer uses which come from “market-related activities,” *ibid.* at 48. Moreover, besides distinct field activities, in Canada most “secondary benefits” still relate to water activities. For instance: “much Canadian economic activity is water resource dependent. Marine transportation depends on water levels, hydro-electric power generation is affected by streamflow and agriculture relies on adequate availability of soil moisture and/or water resources for irrigation. Many industries require abundant water supplies for cooling and manufacturing processes while municipalities need high quality water for public consumption. Hence changes in water resource distributions have major economic implications for almost all Canadian economic sectors,” H.G. Hengeveld, “Climate Change and Water Resources”, in *Proceedings of the Symposium on Interbasin Transfer of Water: Impacts and Research Needs for Canada*, *supra* note 4, at 33. This Canadian

interbasin transfer impacts should be “a multiregional input-output model” which would trace the “impacts not only in the project region, but in all other regions.”¹²⁵ Such a mechanism provides not only the evaluation of “the positive expansionary effects of the project but also the detrimental effects on regions that lose activity as a result of the project.”¹²⁶ The “multiregional input-output model” cannot be ignored as a mechanism that considers the whole picture, producing a more accurate evaluation that includes expansive and restrictive effects.

characteristic makes BWR effects more complex in terms of economic impacts. As Scott advised earlier, *supra* note 83, it is necessary that a decision-maker be in some common unit to solve water allocation problems; otherwise favoured uses can catch all the water, and that certainly results in profound economic impacts. Therefore, for estimating “total” benefits of any water transfer project, one must consider both direct and indirect benefits. Economically, the estimation of secondary benefits implies three assumed conditions, paraphrased *supra* note 25, at 26: 1) full employment of productive economic resources, 2) mobility of these resources, and 3) the absence of different economic productions. However, there are relevant variables such as demand, use, the range of technological change, income and location changes that can definitively breakdown these “three assumptions”, and generate secondary benefits and costs. Besides assumed conditions and a set of relevant variables involved with “secondary benefits”, there are “secondary costs”, which are “decreases in net incomes of factors of production engaged in activities on which expenditures are reduced because of the financing of the project (i.e., mainly because of taxes) or in activities that are displaced by the project through the market,” *supra* note 25, at 27. Charles W. Howe and K. William Easter used these criteria for American water transfer projects such as the Columbia River-Colorado River transfer economic evaluation. The authors developed some criteria for an economic evaluation. For instance, regarding measurement of direct benefits, they suggested that “there are several ways in which direct benefits from water can be measured. The first utilizes the demand function for some water-using entity, the level of aggregation depending upon the particular problem. A second method uses a budget approach to determine willingness to pay by computing a residual ‘left-over’ to water. Other methods use data on farm sales, water sales, and water rentals”, *supra* note 25, at 21. The goal here is not to explain the economic rules of water transference by calculus, statistics and so on, but only to point out the “potential” results of an economic evaluation. Questions from these conditions: 1-How do we measure direct benefits to the (initial) individual water user? 2-How do we trace and value the direct benefits from return flows generated by the initial users? 3-Under what conditions will there be secondary benefits and costs from a national point of view and how do we measure them?

¹²⁵*Ibid.*, at 58. Charles W. Howe and K. William Easter suggested the “multiregional input-output model” as “the ideal tool” of water transfer impacts, *supra* note 25.

Expertise rather than optimism is necessary for evaluating such water projects, even if it is easier to be an optimist about costs when one does not have real estimates. As J.C. Day and Frank Quinn pointed out, regarding some water projects in Canada: “the forecasts of project costs, benefits, and markets for energy, crops or other outputs have often been overly optimistic. Normally, project costs are much higher and benefits much lower than the originally anticipated.”¹²⁷

Social and ecological factors are essential to determine the total benefits and costs of water transfer projects, and they can make it easier to comprehend the economic secondary effects. Economic loss is one impact of large-scale water transfers. Most estimates of interbasin transfer costs reflect only the traditional construction plus any lost hydropower,¹²⁸ which is one of the water opportunities possible to “calculate.”¹²⁹ However, geographical diversity and changes to projects design¹³⁰ prevent any

¹²⁶*Ibid.*

¹²⁷J.C. Day and Frank Quinn, *supra* note 87, at 53.

¹²⁸*Ibid.*, at 107.

¹²⁹“Generally, it has not been possible to determine what the opportunity costs of water exported from different regions actually are, except for the values of hydroelectric power forgone.” *ibid.*, at 106. However, there are social and environmental costs, as noted earlier. Furthermore, “any interbasin transfer will have associated with it three classes of costs.” at least: 1- “the direct construction, operating, and maintenance costs,” for example, the capital involved with each stage of a project and its technical up-date as noted earlier; 2- “the opportunity costs related with the involved land and water in the area of origin”, for instance: fishermen’s compensations; and, 3- “the external costs imposed on parties removed from the project site” such as compensation for inundated areas in case of reservoir creations, *supra* note 25, at 160.

¹³⁰For instance, “estimates provided by the originators of the various plans for diversions into the Colorado River ranged from \$ 9 per acre-foot for 7.5 million acre feet (Miller) to \$ 44 per acre-foot (Pacific Southwest Water Plan) for 2.4 million acre feet. Yet regarding the project plans, “several general points gleaned from study of the preceding proposals are of great relevance to the planning process: 1-The cost of power and the extent to which off-peak power can be utilized for project pumping is an important

generalization of interbasin transfer costs; for instance, losses of opportunities for minerals and forest products in inundated lands.¹³¹ BWR impact assessment studies have to take into account some external costs in the form of ecological impacts or side effects, both beneficial and detrimental.¹³² Thus, it is time to be good students of water interbasin project effects, because as J.C. Day and Frank Quinn noted:

We have had the opportunity to review the effects, good and bad, of several major Canadian interbasin diversion projects over the past decade. Even though Canadians move more water by volume across basin divides than any other people on earth, it is apparent that we are not yet able to anticipate the full range of consequences of our actions. This is because we have become *more proficient as project builders than as students of their effects and consequences*. Our engineering technology for controlling and redistributing the flow of mighty rivers has been good enough to apply around the world, but almost everything else has been relegated to afterthought status: market forecasting, community relations, interagency and intergovernmental coordination, and environmental monitoring and assessment.¹³³

But, faced with such irregular and unpredictable benefits and costs of BWR projects, which alternatives should be considered?

determinant of the cost of interbasin transfers. 2-The extent to which power recovery is possible is of great importance. It was estimated for the Columbia-Colorado diversions that 75-80 percent of the pumping power can be recovered – naturally at different locations. Diversions where recovery is not possible are clearly at a disadvantage, e.g. the Texas High Plains project. and 3-There are substantial economies of scale in construction. The extent to which these economies are offset by increasing power costs, rising marginal opportunity costs of water in the areas of origin, and falling marginal values of water at the point of delivery, is not clear, even for specific projects," *ibid.*, at 16.

¹³¹ "There are reasons to suspect that even the prices that would have to be paid in the market for the types of land involved would not reflect the wildlife and unique aesthetic values of these valley bottomlands." *ibid.*

¹³² Paraphrased, *ibid.*, at 106.

Alternatives can be found in either a supply or demand management. Water supply management responses are often mechanical solutions similar to BWR such as additional development of surface supplies, groundwater developments, desalting projects.¹³⁴ On the other hand, water demand management tools usually are legal and policy mechanisms such as regulations, pricing and education.¹³⁵ They can help to achieve the equilibrium between water demands and supplies. A water demand management “approach would help eliminate or at least defer the need for the massive environmental and social disturbance and public debt associated with mega project diversions as long as possible.”¹³⁶ Although a water demand management approach requires certain institutional aptitude and community support, it appears more sustainable than the water supply mechanism.

In addition to all these alternatives, the mitigation of BWR’s harmful impacts may also be an alternative for regions where even the best legal and institutional arrangements cannot help to overcome the physical lack of water resources. Therefore, either the water transference impacts or

¹³³J.C. Day and Frank Quinn, *supra* note 87, at 52 [emphasis added].

¹³⁴ Paraphrased. Charles and William, *supra* note 25, at 111.

¹³⁵ Paraphrased. Allan Bronsro. “Pricing Urban Water as a Scarce Resource: Lessons from Cities Around the World”, *Mountains to Sea: Human Interaction with the Hydrologic Cycle*, Canadian Water Resources Association (CWRA) 51st Annual Conference Proceedings, June 10-12 1998, Victoria, B.C., Canada, at 187. Demand management is “any measure designed to reduce the volume of fresh water being withdrawn...but without reducing consumer satisfaction and/or output”, *ibid.*, at 189. See Chapter Five the evaluation of Manitoba and Ceara Water Allocation System and their legal and policy mechanisms, especially pricing.

¹³⁶ Charles W. Howe and K. Willian Easter, *supra* note 25, at 111..

their alternatives¹³⁷ should be studied in terms of multiregional extension and social considerations, researching about the social factors, costs and losses involved in any water allocation permissions. BWR damage impacts have to be known and accurately assessed. As for the relevance of water uses and social reasons, “there can be no objection to a decision that certain types of water use should enjoy a special status for valid social reasons;”¹³⁸ for instance, the establishment of minimum flow and stream protections as priorities under permit systems. Both minimum flow and stream protection are important aspects for maintaining other water uses and values such as fisheries, fish habitat, and wildlife. They can guarantee multiple uses of water. The multiple use of water is a privileged principle in both Canadian and Brazilian water management systems, and it can be a basis for solving water conflicts and granting public interests related to water resources allocation. Thus, any water transfer project has to seek out minimum flow, stream protection and multiple use of water if they intend to be sustainable.

¹³⁷—If the set of alternatives is too small, the finest optimizing of [any] system design may still fall short of the social optimum. Yet, any planning process has limited time and budget and, more to the point, any planning organization will have only limited expertise for the evaluation of alternatives.” *supra* note 25, at 111.

¹³⁸David Percy, *The Framework of Water Rights Legislation in Canada*, *supra* note 4, at 91. For instance, regarding the Ontario system, Percy pointed out that “in areas where there is considerable pressure on water supply and there is likely to be insufficient water to meet both established and new uses, the Ministry carried out an evaluation of the relative importance of various uses of water. Normally, uses of water for domestic, farm, and fire-protection purposes are considered most important, followed by municipal uses and then uses for industrial, commercial, and irrigation purposes”, *ibid.* at 78. Although “the priorities established under the permit system in Ontario appear to be arbitrary and the result of historical accident rather than conscious social choice,” *ibid.*

As noted earlier, the relationship between supply and demand can be a creation of needs, which is often politically orientated. Actually, a region is often considered deficient in water resources without either re-allocating its resources or adopting conservation attitudes. Therefore, it is necessary not only to establish how serious the “water crisis” is in the importer’s region but also to verify the export region’s conditions and the implications for its water export. Water transfer projects cannot be done based on the assumption that adequate water supplies will be made available under mechanical mechanisms for new supplies such as BWR instead of under better management of existing supplies. This assumption should be questioned and both the country and the involved regions must answer: does the importing region need more water? What does it need it for? How is it using existing supplies? Can sufficient water be secured through conservation and re-use, to satisfy its needs? To what extent and under what criteria should the national and regional governments assist local water conservation measures? What are the prospects for improving water supplies within the importing region, through weather modification, control of evaporation losses, groundwater development, vegetation management and modification, or other means? Are present irrigation practices wasteful? Does it make sense to transport water for hundreds of miles? How will the exporting region be affected if such amounts of water are taken away? What are the benefits and costs?¹³⁹

¹³⁹Paraphrased. Charles W. Howe and K. Willian Easter, *supra* note 25, at 16.

Boyanowsky has argued, “the utilitarian supply/demand view of water resources is seriously flawed. It fails to recognize the ecological and even spiritual values of water,”¹⁴⁰ because ...“the entire landscape is a function of the normal flow of a stream, of its floods and its low flows.”¹⁴¹ Moreover, “most of life depends upon that extremely productive and sensitive meeting place of land and water along streams, around lakes, in wetlands and in estuaries. Vegetation, insects and fish, birds and animals, and people too, thrive where land meets water. Here the connections between water and life are strong and easily seen.”¹⁴²

Furthermore, the water “surplus” and “deficit” issues involve more than economic and physical aspects. As Percy pointed out, “it is widely accepted that the question of whether a water shortage exists is economic rather than physical in nature, but the question also has an important legal aspect, which is frequently overlooked.”¹⁴³ For instance, water conservation and proper uses can result from a wise water allocation system, and they are connected with the needs for water supply and BWR. Therefore, the water laws and their water allocation systems should be analysed and reformed if necessary, in terms of their effects on water

¹⁴⁰Ehor Boyanowsky, *supra* note 95, at 269.

¹⁴¹Richard Bocking, *supra* note 30, at 280. He argued that there is no surplus water because “all water is used in some way, even if only to support the beauty of landscape”, at 277.

¹⁴²*Ibid.*, at 279.

¹⁴³David Percy, “The Institutional Creation of Water Shortages on the Canadians Plains”, *supra* note 4, at 452, this legal dimension of water interbasin is discussed below, regarding laws and policies.

scarcity.¹⁴⁴ That is the aim of the next chapters: to discuss the legal framework and institutional arrangements for water allocation in Canada (Manitoba) and Brazil (Ceara), including related constitutional rules.

¹⁴⁴Chapter Five analyses Manitoba and Ceara water systems regarding their efficiency in allocating water resources and rights.

CHAPTER TWO FEDERAL-PROVINCIAL JURISDICTION FOR BULK WATER REMOVAL

This chapter explains the federal system and its water jurisdiction, both in Canada and in Brazil. It gives an introduction to the formal institutional arrangements through the analysis of the constitutional rules relevant to water allocation and BWR.

1. Constitutional Law

Constitutions “are universally understood to be all about governments, what institutions they include, how they are structured, and what kind of power they can wield....”¹⁴⁵ The constitution validates the legal, political, social and economic systems of a nation. It usually expresses an ideological view¹⁴⁶ of society and state¹⁴⁷ in an institutional order; for instance, the separation of powers (Legislative, Judicial and Executive), the social services (Education, Health, Environmental and others), the economic order (economic liberties, economic planning and others), property regimes¹⁴⁸ (private, public, collective property). Through

¹⁴⁵David Beatty, *Constitutional Law in Theory and Practice*, (Toronto: University of Toronto Press, 1995), at 3.

¹⁴⁶Regarding the ideological aspect of constitutions, see Ferdinand Lassale, *Que e uma Constituicao?* traducao do Alemao por Walter Stonner (Rio de Janeiro: Laemmert, 1969).

¹⁴⁷Related to state issues, the constitution establishes principles and rules about its form, nature and structure of government and its relationship with citizens.

¹⁴⁸Bruce Ziff, *Principles of Property Law* (Ontario: Carswell, 2000), at 8. “Laws about property reflect important social values”. “While private property might be seen as natural as the morning sun to most of us, that is just an illusion: in fact, it is a thoroughly contestable notion. Many Canadians might feel that enacting constitutional protections for property would improve our lives, but I find it intriguing that conceptions of perfect societies often involve the virtual elimination of private ownership, usually in the cause of advancing some notion of equality. This approach is evident in Plato's

its provisions and principles, a constitution can favour any kind of order and system,¹⁴⁹ establishing free or protected markets, private ownership and enterprise, the free flow of international capital and trade, and so on. For example, the Brazilian constitution regarding the "Economic and Financial Order" establishes a private property regime.¹⁵⁰

Therefore, establishing its rules, the constitution can also shape natural resources management through ownership, legislative power, and management power.¹⁵¹ For instance, the constitution can establish water property rights for different levels of government, exercised by legislative powers that grant water under jurisdiction. Here, the interest is to know how these three constitutional aspects regarding water and BWR are established and what their limits are in the Canadian and Brazilian systems.

Republic and Thomas More's Utopia, two of the best-known examples of this type of theorizing."

¹⁴⁹For instance, Nazism was a "legitimate" system according to the German Constitution.

¹⁵⁰In Title VII Economic and Financial Order, Chapter I General Principles of Economic Activity. Article 170 : "[T]he economic order, founded on the appreciation of human work and on free enterprise, is intended to ensure everyone a life with dignity, according to the dictates of social justice, with due regard for the following principles: I. national sovereignty; II. private property; III. the social function of property; IV. free competition; V. defense of the consumer; VI. defense of the environment; VII. reduction of regional and social differences; VIII. achievement of full employment; IX. favored treatment for small Brazilian companies of national capital," RT Codigos, *Constituicao Federal*, 5a. ed. (Sao Paulo: Revista dos Tribunais-RT, 1999). *Brazil-Constitution*, International Constitutional Law (ICL), on line: <www.uni-wuerzburg.de/law/br00000_idx.html> (last modified: 30 March 1999). However, natural resources in both Brazilian and Canadian constitutions are established as public property. Therefore, water is a public property, as explained below.

¹⁵¹Regarding Constitution and Natural Resources literature, see Gerard V. La Forest, *Natural Resources and Public Property under the Canadian Constitution* (Toronto: University of Toronto Press, 1969); Bora Laskin, *Jurisdictional Framework for Water Management* (Toronto: Resources for Tomorrow Conference, 1961), and P. W. Hogg, *Constitutional Law of Canada*, Loose-leaf Edition, Volume 1, (Ontario: Carswell, 1997); Jose Afonso da Silva, *Direito Constitucional*, 2ª edicao revista (Sao Paulo:

The following sections explain both federal systems and the constitutional divisions of power for water property rights, legislative powers and jurisdiction related to BWR issues.

1.1. Federalism and BWR in Canada and Brazil

A federation is a state organisation in which political powers are exercised in such a way that the central unit of sovereignty conciliates and harmonises with a multiplicity of territorial units, which have political and administrative self-government.

Canada, like Brazil, is a constitutional federation; however, it has only two federated levels, compared with Brazil's three. Canada's constitutional national order is in the federal government, and the regional orders are in ten provinces and three territories.

The first *Canadian Constitution Act, 1867* (i.e., the British North America Act)¹⁵² established a union of four original provinces, forming a federation. Thereafter, the political administrative organisations of Canada comprise the federal government (and until recently its directly administered territories) and the provincial governments, all being complementarily autonomous.

Malheiros Editores, 1994), Vladimir Passos de Freitas, *Direito Administrativo e Meio Ambiente* (Curitiba: Jurua Editora, 1995).

¹⁵²*Constitution Act, 1867* (U.K.), 30 & 31 Vict., c. 3; this consolidation contains material prepared by E. A. Driedger. *Consolidated Constitutional Laws of Canada (1867 - 1982)*, from the Canada Department of Justice, Laws of Canada, Constitutional Documents, on line
<http://www.canada.justice.gc.ca/c/s.dll/folioisa.dll/CONST_E.NFO/querf=*/doc/{@0}?firsthit>.

With three constitutional levels of powers, the Federal Republic of Brazil comprises the Union, the States, the Federal District, and the Municipalities, each being autonomous according to the Constitution enacted in 1988.¹⁵³ First, the total order is the Union; second, the regional orders are the States; and finally, the local orders are the Municipalities. A municipality is a public agency and member of the federation. This integration is an international peculiarity, because a municipality is not constitutionally recognised as a partner of federalism in other nations. The Federal District is on the same level as the States, as part of the Union.¹⁵⁴ So, there are self-governmental bodies at the federal and the regional levels of government in both Canada and Brazil.

No different from Brazil's federalism, Canada's unified legal system is based on a distribution of jurisdictions and powers. However, in the Canadian system most¹⁵⁵ jurisdiction is exclusive, meaning that what the provinces have, by way of jurisdiction for specific matters, the federal government does not have, and *vice versa*; for instance, provincial exclusive jurisdiction concerned with matters enumerated in s. 92 of the *Constitution Act, 1867*.¹⁵⁶ In the Brazilian system, on the other hand,

¹⁵³Articles 1 and 18, *supra* note 198.

¹⁵⁴This comparison is also necessary regarding "Federal District" water ownership. Cid Tomanik Pompeu has pointed out that it is necessary to make an analogy with the states for recognizing the existence of district waters. *supra* note 65, at 621 [translated by Sandra Cilce De Aquino].

¹⁵⁵"Most" jurisdictions are exclusive, because there is also a shared jurisdiction as explained later in this section. Certainly, these shared jurisdiction produce overlap situations and consequent jurisdictional issues. Section 92, and Sections 92A (2) and (3) for exclusive and shared jurisdictions, respectively, *supra* note 152.

¹⁵⁶*Supra* note 152.

jurisdiction is blended among “exclusive” (private), common and competitive jurisdictions.¹⁵⁷

The distribution of jurisdictions among the federated units is often not perfect and results jurisdictional issues such as overlap, *ultra* and *intra vires*, and paramountcy. These jurisdictional problems can be obstacles to water management, resulting in conflicts and costs for different governmental levels of the federation and water users. Regarding water resources, this thesis examines three inter-related aspects of jurisdiction:

¹⁵⁷The terms “exclusive” and “private” jurisdictions in Brazilian Law are distinct. In each kind of jurisdiction, there is “exclusivity of power”; however, in an “exclusive” jurisdiction this power cannot be delegated as it can in a “private” jurisdiction. So, when used here, “exclusive jurisdiction” only pertains to “private”. Private jurisdiction is a competence in which a federated entity has exclusive power that is enumerated in the Federal Constitution. Moreover, private jurisdiction within the Union is in Articles 21 and 22, for example a competence to institute a National Water Management System, and to Municipalities in Article 30, related to local interest, for example to promote the protection of local historical cultural monuments. However, the private jurisdiction of States is named a “remaining” jurisdiction, because in fact States have whatever jurisdictions remain outside of federal or municipal entities, according to Article 25; for example, if a State wants to legislate about wetlands within its territory, it will be possible since there is no federal law for this issue. Furthermore, in order to balance the development and welfare of the national sphere, the Constitution recognises a common jurisdiction that offers a way for researching cooperative federalism. Here, a governmental entity’s goal is not to fight for its jurisdiction but to maintain links for realising the needs of citizens. So, Article 31 foresees cooperation among the Union, the States, the Federal District, and the Municipalities; for example, any of them can provide the means of access to environmental education. Finally, a shared jurisdiction means that different federated institutions can have jurisdiction over the same issue, even if it can be common or competitive. Regarding a competitive jurisdiction, Article 24 of the Federal Constitution establishes that the Union, the States and the Federal District are able to legislate competitively about several matters; however, the Municipality cannot. For example, the Union can make a law regarding a national fish species, because it is an issue of general interest; or a State can make a law to create a park for special protection to the environment within state owned lands. According to Article 30, the Municipality is allowed only to supplement the federal and state laws where applicable; for example, a municipality can supplement a state law under city planning, *supra* note 150. Moreover, the only hierarchy in a competitive jurisdiction is that the Municipality in its legislation must conform to the general laws of the Union and of the States, and these also have to conform to the general laws that are peculiar to the Union. So, in a competitive jurisdiction, the States are also allowed to legislate

property, legislative power, and management control. It also investigates the legal dimension of BWR problems related to jurisdictional troubles.¹⁵⁸

1.2. BWR Jurisdictional Issues

1.2.1. Canada

The Canadian constitution does not specifically mention water itself but it regulates natural resources¹⁵⁹ and such water utilisation as navigation,¹⁶⁰ fisheries,¹⁶¹ and electrical energy generation.¹⁶² However, the jurisdiction over water resources can be included in the constitutional dispositions such as property rights and legislative powers, as mentioned above.

Water is a state public property the rights of which vest in the Federal and/or Provincial governments.¹⁶³ The provincial water

general laws supplementary to the Union, but they have full legislative jurisdiction only over their own peculiarities.

¹⁵⁸Effect on inter-provincial waters such as constitutional law and conflict of laws is one of legal dimension of the inter-basin transfer issues points out by David Percy, "Legal and Jurisdictional Aspects of Inter-basin Transfers", *supra* note 4. The two other dimensions pointed out are: effects on existing rights such as interference with vested rights in the region of origin and creation of legal problems in the region whose water supply is to be augmented, and effects on existing rights such as interference with vested rights in the region of origin and creation of legal problems in the region whose water supply is to be augmented, Percy, "The Institutional Creation of Water Shortages on the Canadian Plains." and "Water Rights Law and Water Shortages in Western Canada". *supra* note 4. These two dimensions are analysed in this thesis in Chapter Three, Four and Five.

¹⁵⁹S. 109, *supra* note 152.

¹⁶⁰S. 91(10), *ibid.*

¹⁶¹S. 91(12), *ibid.*

¹⁶²S. 92A (1) (c), (4) (b), *ibid.*

¹⁶³A state property "refers to property in which the state possesses the power of exclusion", and it is "subject to state control and is burdened with public obligations," *supra* note 190, at 7. As Daniel W. Bromley notes "the introduction of a state property regime may sometimes be proposed to address the resource degradation problem", "however, most analysts agree that this shift in the locus of control has not resulted in effective natural resource management. It has, instead, simply weakened local customary regimes," *Environment and Economy: Property Rights and Public Policy* (Oxford :

ownership¹⁶⁴ results from its property rights over the natural resources located within its boundaries, according to the *Canadian Constitution Act* (S. 109).¹⁶⁵ In the case of Manitoba, Saskatchewan and Alberta, the federal government retained natural resources property rights until 1930 when the Natural Resources Agreements¹⁶⁶ transferred those resources to these provinces. “Although the general transfer of natural resources in 1930 was intended to include water rights, some questions arose whether the wording of the *Natural Resources Transfer Agreements* accomplished this objective.”¹⁶⁷ In 1938, these agreements were amended. This amendment clarified that the federal Crown had transferred water resources to the

Blackwell, 1991). at 34. “The formula, which vests the right to use water in the Crown, in both the federal and the British Columbia legislation is copied almost directly from the 1886 *Irrigation Act* of the Australian state of Victoria, and the most likely conjecture is that the similarity between the two Canadian Acts was merely coincidental,” Percy, *The Framework of Water Rights Legislation in Canada*, *supra* note 4, at 8. Property rights regimes, water policy, management and environmental issues are subjects of Chapter Four. Yet, in Canada, there is a discussion over riparian rights as remaining private water property rights. Anthony Scott pointed out that “in the Canadian provinces the simple system of private landowners having riparian rights to adjoining water is rarely in effect today. Instead the provincial governments exercise, more or less all rights over water within their boundaries,” *The Economics of Water Export Policy, Inquiry on Federal Water Policy: Research Paper 7* (Ottawa: Queen’s Printer, 1995), at 11. The discussion about riparian rights is the subject of Chapter Five. In this chapter, there is also a debate about the legal nature of water licenses that grant water rights where water is a state property whether it is as a property right, a contract or a merely administrative authorisation. Discussing the security of water rights, Lucas discussed water licenses’ legal nature, *supra* note 60.

¹⁶⁴Regarding the term “water ownership” in Scott’s opinion, it is not technically accurate because the law never recognised such ownership but that does not mean that no legal rights over water exist; for instance, riparian rights, *ibid.*, at 11.

¹⁶⁵The *Constitution Act*, *supra* note 152.

¹⁶⁶P. W. Hogg, *supra* note 151. “These agreements were confirmed, and given overriding effect, by the *Constitution Act, 1930*”, *ibid.*, at 28-2. According to footnote (56) of S. 109: “Manitoba, Alberta and Saskatchewan were placed in the same position as the original provinces by the *Constitution Act, 1930*, 20-21 Geo. V, c. 26 (U.K.)” These matters were dealt with in respect to British Columbia by the British Columbia Terms of Union and also in part by the *Constitution Act, 1930*, *supra* note 152.

¹⁶⁷Percy, *The Framework of Water Rights Legislation in Canada*, at 11, and “Water Rights in Alberta”, at 146, *supra* note 4.

provinces.¹⁶⁸ As a result, the water laws of the prairie provinces present a common historical root in their constitutional development.¹⁶⁹

Water therefore is a natural resource vested in the provinces. This provincial water ownership grants provincial jurisdiction over BWR but not a free provincial BWR management. Even if a water export¹⁷⁰ is proposed as an intra-provincial transfer, there still are constitutional restraints on provincial action.¹⁷¹ “Although the province ‘owns’ the water resources in question, it does not have uncontrolled discretion to manage them because of the existence of certain heads of federal legislative power relating to water.”¹⁷² Therefore provincial water property rights over bodies of water

¹⁶⁸*Ibid.*, *The Framework of Water Rights Legislation in Canada*, at 11. Moreover, “The express terms of the *Alberta and Saskatchewan Acts*, and the judicial and academic authority relating to the *Manitoba Act*, indicate that the natural resources retained by the Dominion included water rights,” at 9. Even though it refers to all Manitoba waters, the 1938 amendment left some doubts as to the status of water in southern Manitoba, because the federal Crown probably had no interest in that water under the *Irrigation Act* which it could transfer to Manitoba, as the legislation never originally applied to that region. If this is the case, Manitoba would have to rely on the general words of the 1930 Agreements (which transferred the interest if the federal Crown in all Crown lands, mines, and minerals) for its ownership of water rights in the southern part of the province,” at 11.

¹⁶⁹Percy, “The Institutional Creation of Water Shortages on the Canadians Plains”, *supra* note 4, at 453. Percy points out that “rather than investing enormous resources in drafting new Acts, Alberta, Saskatchewan and Manitoba each simply adopted the former federal Irrigation Act as provincial legislation, with only minor amendments of a technical nature. Although divergences from this basic model of water law naturally occurred over the years, it was not subject to any fundamental reexamination until the Saskatchewan Water Corporation Act was passed in 1984. Most water rights on the prairies were thus granted under the basic legal model and it remains influential today, even in Saskatchewan.” *ibid.*

¹⁷⁰Recalling the concept of “export” explained in Chapter 1, “water export” can be intra-provincial, inter-provincial, or international.

¹⁷¹Percy, “Legal and Jurisdictional Aspects of Interbasin Transfers”, *supra* note 4, at 6.

¹⁷²*Ibid.* About federal powers and water management, “in the Yukon and the Northwest Territories, of course, the federal government exercises plenary jurisdiction, in effect taking on the full powers that would normally be divided between the provincial and federal levels. While there are interesting questions as to how water management should be shared administratively in the North between territorial and federal agencies, these do not raise any fundamental constitutional questions. It is clear that as a matter of

within their borders can be limited by the federal legislative power, such as that over fisheries.¹⁷³

The legal debate about water jurisdiction for BWR especially pertains to interprovincial waters. Because inter-provincial jurisdiction is not clearly established, the certainty of federal intervention in BWR management can be debatable in a concrete situation, project by project, mainly in cases that have water conflicts. However, such conflicts are often solved by the federal supremacy principle, “where such a law of Parliament and a law of a province conflict, the law of Parliament prevails to the extent of the conflict.”¹⁷⁴

Related to water management jurisdiction, a fundamental question concerns the extent to which a province can intervene in the flow of a river that runs into another jurisdiction.¹⁷⁵ That is, what is the extent of provincial sovereignty over water flow effects?

Surely BWR is no exception in raising inter-jurisdictional issues, especially because of its likely hydrological effects such as water stream

constitutional law any territorial role in water management depends ultimately on, and exists at the sufferance of the federal authority,” Owen Saunders, “Management and Diversion of Interjurisdictional Rivers in Canada: A Legal Perspective”, *supra* note 4, at 466. In Brazil, as noted, there are no federal territories; however, its federated system allows for their creation.

¹⁷³S.91 (12), *supra* note 152. All other federal legislative powers related to BWR are studied below.

¹⁷⁴S. 92 A (3), *supra* note 152.

¹⁷⁵Paraphrased Percy, “Legal and Jurisdictional Aspects of Interbasin Transfer”, *supra* note 4, at 7. Percy has mentioned that if this question had been posed “ten years ago” (1980) a reasonable answer would have been that “the upstream province enjoyed virtual sovereignty over the river and could reduce its flow or even pollute it without much regard for its downstream neighbors,” and “provincial sovereignty was probably limited only by the requirement that it not interfere with fisheries or navigation”, *ibid.*, respectively at 7 and 8. However, such limits of provincial sovereignty have changed.

and flow impacts. Water flows naturally but the impacts of its mobility over the land do not recognise jurisdictional limits and the fact that each jurisdiction has its own interests. These inter-jurisdictional problems can be emphasised by both natural factors such as water flow and watershed effects,¹⁷⁶ and by legal effects such as a water-shared jurisdiction. Yet, it is recognised that citizens in a downstream province are able to bring actions related to damages caused by BWR in an upstream province.¹⁷⁷ *Pascall Bighetty v. Saskatchewan Power Corporation*¹⁷⁸ is a case on point:

In this action, the plaintiffs allege that a power plant and dam owned by Saskatchewan Power Corporation and located in the Province of Saskatchewan has caused water levels in Manitoba to rise with resultant flood, and they ask for a declaration that Saskatchewan Power Corporation requires licences under Manitoba legislation with respect to the operation of the plant and dam, and an injunction against the defendant restraining the actions causing the flooding pending the issuance of licences....¹⁷⁹

¹⁷⁶ According to Environment Canada, "watershed is a land area draining into a common watercourse or water body. Often called a catchment area, a drainage basin or a river basin. For example, the Great Lakes Drainage Basin is not restricted to the lakes themselves, but includes the many rivers and their tributaries that ultimately flow into the lakes." Environment Canada, *The Management of Water: Bulk Water Removal and Water Export – Background Information*, (Environment Canada: Fresh Water, 1999) on line < <http://www.ec.gc.ca/water/index.htm> > (last update: 18 August 1999).

¹⁷⁷ Percy points out the possibility of this kind of action related to inter-basin problems. *ibid.*, at 8. He has given some examples such as the *Town of Peace River v. British Columbia Hydro & Power Authority* [1973] 29 D.L.R. (3d) 769 (C.A.). Regarding this case, Percy explained that "the town was held to be entitled to sue in Alberta for damage caused to its water utilities plant by the reduction in the flow of the Peace River on the theory that the action was in respect of a tort committed in Alberta." *ibid.* The other example is the *Interprovincial Co-Operative v. Manitoba*, *infra* note 188, and commentaries below.

¹⁷⁸ *Pascall Bighetty v. Saskatchewan Power Corporation* (1 June, 1993), Winnipeg 92-01065290 (Man. Q. B.)

¹⁷⁹ *ibid.*, at 1. This case is analysed by Gordon E. Hannon, "Rivers Run to the Sea: a Case Study of the Law Relating to Interprovincial Waters and Water Powers". (National Symposium on Water Law, Environmental Law CLE Program, Toronto, April 1999) [unpublished].

In this case, waterworks affected the levels and flows of water both upstream and downstream into Manitoba. These water flow effects can occur in any other water projects because water's innate characteristics are the same, regardless of its uses; for example, any kind of bulk water removal will create some detrimental effects downstream and consequent conflicts.

As a result, in this case after a long judicial dispute the Manitoba courts, both Queen's Bench and the Court of Appeal dismissed SaskPower's motion to strike the claim. However, later in the summer of 1998, a Statement of Common Objective was signed by which Mathias Colomb and Barren Lands First Nations, SaskPower, Saskatchewan Water Corporation and Manitoba Natural Resources have agreed to the following common objective:

That SaskPower facilities and the water regime be properly licensed and SaskPower obtain the proper land-use authorisations in order to operate, based on a plan developed to serve the multiple water regime management objectives of all parties, and utilizing a water management process accepted by all parties.¹⁸⁰

The solution for this case, involving all interested parties in Manitoba and Saskatchewan, appears to be an effective way to resolve inter-jurisdiction conflicts related to water resources. Negotiation appears to be a good means to accommodate rights and the views of involved

¹⁸⁰ *Ibid.*

parties. However, some parties have not fulfilled agreements. The agreement of SaskPower is not yet accomplished. The First Nations involved are still waiting for mediation and compensation.¹⁸¹ As Owen Saunders notes the interjurisdictional effects have been negotiated rather than decided by Canadian courts.¹⁸² Inter-jurisdictional agreements between different governments and involved third parties can create other kinds of problems, such as their non-enforcement.¹⁸³

Shared water jurisdiction can also create problems. Both legal systems, Brazilian and Canadian, have shared water jurisdictions.¹⁸⁴ It can be a “competitive” one related to water management, because it allots “cumulatively”¹⁸⁵ competence to different governmental entities for protecting the aquatic environment. In other words, because of simultaneous participation (overlap), there can be jurisdictional conflicts between or among different levels, such as federal and provincial/state, or among the same levels, such as inter-regionally in the example above.

¹⁸¹ According to Arne Peltz, plaintiffs’ lawyer.

¹⁸² As Owen Saunders mentioned “where Americans look to the courts for solutions, Canadians prefer the safer course of negotiation,” *supra* note 172, at 466.

¹⁸³ Owen Saunders has stressed that “Canadian governments have generally performed well in responding to this legal fragmentation, through a series of interjurisdictional agreements and understandings. These agreements do, however, raise special legal problems, particularly with respect to enforceability. More seriously, the particular framework of Canadian federalism makes the imposition of such agreements extremely difficult where one party remains recalcitrant, even though principles of sound water management might dictate that some co-operation is essential,” *ibid.*, at 465.

¹⁸⁴ See note 202 about jurisdictions and explanations above.

¹⁸⁵ Jose Afonso da Silva, *supra* note 151.

Licensing¹⁸⁶ BWR in distinct ways, these federated levels can administer water resources within their territories. However, these different levels of federation have a common jurisdiction to protect their environments against damage; for instance, the harmful effects of BWR. Furthermore, an uncertain jurisdictional situation may create conflicts among the different federated levels, since water flows freely through their territories. Which standard will be followed, since these governments have a shared jurisdiction and usually different environmental standards for water quality and damage to their river?¹⁸⁷

Such complex jurisdictional issues, whether in Canadian or Brazilian legal systems, can result in bewildering solutions, especially related to inter-jurisdictional relationships in such real cases as *Interprovincial Co-Operative v. Manitoba*¹⁸⁸ and *R. v. Crown Zellerbach Canada Ltd.*¹⁸⁹

¹⁸⁶Most Canadian provinces have already established a moratorium to BWR: Alberta, British Columbia, Manitoba, Newfoundland, Nova Scotia, Ontario, Quebec rules; for respective water acts, see note 19.

¹⁸⁷For instance, a BWR project in a long extent river such as the Sao Francisco, which flows through five northeastern Brazilian states. Even though, it is a federal river, all state governments have jurisdiction to enforce laws and to make regulations for protecting the environment against damage and pollution in any of its forms: Article 31, VI of the Federal Constitution, *supra* note 150. The states cannot disregard the minimum federal standard but they can establish a higher standard in favor of environmental quality. Such water transfer can "export" different pollution effects from its construction and maintenance.

¹⁸⁸*Interprovincial Co-Operatives v. Manitoba* (1975), [1976] 1 S. C. R. 477, 53 D. L. R. (3d) 321.

¹⁸⁹*R v. Crown Zellerbach Canada Ltd.*, [1988] 1 S.C.R. 401; 49 D.L.R. (4th) 161. Besides the interjurisdictional issues, this case also presented relevant issues regarding conflicts between international and provincial laws topic studied in Chapter Three of this thesis. Related to interprovincial waters, the discussion was regarding coastal marine waters and internal marine waters, that is "whether federal legislative jurisdiction to regulate the dumping of substances at sea, as a measure for the prevention

The *Interprovincial Co-Operative v. Manitoba*¹⁹⁰ case involved contaminant discharged in extra-provincial waters. The original defendants, at trial, Interprovincial Co-Operative and Dryden Chemicals, “operators of chlor-alkali plants in Ontario and Saskatchewan, under permits from these provinces, discharged mercury into watercourses that drain into Manitoba.” The fishing industry in Manitoba suffered damages, but some fishing companies received compensation from the respondent. Therefore, “the respondent, as statutory assignee of the rights of the commercial fishermen to sue, brought an action against the defendants under S. 4 (1) of the Act [the *Fishermen’s Assistance and Polluter’s Liability Act*, 1970 (Man.), c. 32] for an injunction, damages and the amount of compensation paid to the fishermen”.¹⁹¹

In this case, certain issues regarding water flow effects and jurisdictions over water pollution in interprovincial waters were examined, such as the constitutional distribution of legislative authority, validity of legislation, action ability of torts and guaranty of civil rights. Different

of marine pollution, extends to regulation of dumping in provincial marine waters”. at 165. Le Dain J. notes that “in many cases the pollution of fresh water will have a polluting effect in the marine waters into which they flow, and this is noted by the United Nations Report, but that report, as I have suggested emphasizes that marine pollution, because of the differences in the composition and action of marine waters and fresh waters, has its own characteristics and scientific considerations that distinguish it from fresh water pollution”. at 188. The distinction between marine and fresh waters is essential to the distribution of jurisdiction. In this case, the consideration was that the extra-provincial and international character and implications of marine pollution was a matter of concern to Canada as a whole. Thus, the jurisdiction of the federal government was considered under the P.O.G.G. power. However, BWR regards allocation of freshwater, which is a matter of provincial legislative power, the use of P.O.G.G. for this concern appears to be weak. The federal government may interfere in provincial waters using the Fisheries and Navigation powers, as explained below.

¹⁹⁰Supra note 188.

answers for these questions could be presented because they are not easily resolved, and their solutions apparently could be found in different constitutional rules.¹⁹² Here the purpose is not to discuss differing judicial opinions of this case¹⁹³ but only to give instances of how complex a water jurisdictional issue can be in practice. If a province licenses a BWR project that affects other jurisdictions, how should such shared jurisdictional and inter-jurisdictional problems be solved?¹⁹⁴

Can a province validly license acts within its boundaries that have injurious effects outside them so as to deny the persons suffering the injury in another Province whatever remedies may be available to them at common law?¹⁹⁵

The old provincial jurisdiction extended “to regulate freely an interprovincial river before it crosses provincial boundaries”¹⁹⁶ has been changed and limited with the occurrence of factors such as “private

¹⁹¹ *Ibid.*, at 321.

¹⁹² For example, regarding legislative authority, *per* Ritchie, J.: “Legislative jurisdiction over water pollution in interprovincial water resides in Parliament under s. 91(27) of the British North America Act, 1867. A Province has exclusive jurisdiction to deal with the effects of pollution but such legislation cannot have extra-provincial effect,” *ibid.*, at 322.

¹⁹³ For analysis, *ibid.*

¹⁹⁴ David Percy has pointed out that this case illustrated the Canadian courts’ tendency to adopt the theory that “the upstream province could not validly license acts within its boundaries which had injurious consequences in other jurisdictions”, and a possible recognition of “the ability of a citizen in a downstream province to bring a action in respect of harm done by diversions or by pollution occurring in an upstream province.” “Legal and Jurisdictional Aspects of Interbasin Transfers”, *supra* note 4, at 8. This court position “may well represent the future trend of the law, as it seems to be a logical consequence of the theory that a tort is committed in the jurisdiction where its harmful effects are felt”, *ibid.* Further, Percy also noted that this “opinion must clearly be taken into account in planning for an inter-basin transfer, for if it does represent the direction of the law, it can considerably restrict the ability of a province to carry unilaterally out a major diversion of an interjurisdictional river and require serious consideration of downstream effects in other jurisdiction,” *ibid.*, at 9.

¹⁹⁵ *Ibid.*, at 321-22 [question mark added].

¹⁹⁶ *Ibid.*, at 8.

lawsuits in the downstream province,”¹⁹⁷ as illustrated in the case above. These factors may be used as a basis for BWR inter-jurisdictional conflict resolutions, even though the answer to the fundamental question of the extent of provincial sovereignty remains without a clear statement. On the other hand, all of this should be included in any BWR evaluation, to highlight the need for BWR’s prior planning.¹⁹⁸ The compensation from these legal actions may be a reasonable solution for water conflicts from BWR projects but they cannot avoid or even sometimes mitigate BWR’s undesirable effects. In addition to the vagueness of the extension of provincial and federal power under water management, the water legislative power division also contributes to the complexity of such jurisdictional issues.

Dealing with the power to legislate under the Canadian constitution regarding water export, Scott notes, “both federal and provincial governments would have roles.” The provincial legislative powers relevant for water resources management and consequently for BWR are the following¹⁹⁹ established by the *Constitution Act*.²⁰⁰ management and sale of

¹⁹⁷*Ibid.*

¹⁹⁸*Ibid.*, at 9.

¹⁹⁹This selection is paraphrased from Owen Saunders’ explanations. *supra* note 172, at 467. He points out that the provincial water property rights “have arguably been strengthened by the 1982 Resource Amendment to the *Constitution* – section 92A – which, *inter alia*, holds some implications with respect to the use of water in the generation of hydroelectricity....[A]dditionally, provinces are given the power to legislate with respect to interprovincial exports of their electricity on a non-discriminatory basis (section 92A (3)), and also have expanded capacity to tax such production, again so long as the taxation does not discriminate between production used in the province and that exported to other province (Section 92A (4) (b)).” *ibid.* His opinion about section 92A “is that it is likely to have only a very limited effect on water

a province's public land, s. 92 (5); property and civil rights in the province, s. 92 (13); matters of a local or private nature, s. 92 (16); agriculture, s. 95. However, the strongest provincial power to legislate about BWR appears to be under its property rights (s. 92 (5)).²⁰¹

On the other hand, some federal legislative powers compete to legislate over waters, either with a specific constitutional heading such as the fisheries power, or with a general constitutional heading such as "Peace, Order and Good Government."²⁰² Scott mentions six relevant constitutional heads with which "the federal government must play some roles in setting up/or approving a water export project": 1) the regulation of certain classes of Works and Undertakings beyond the provincial boundaries such as "shipping lines, railways, canals, telegraphs" and others, sections 91(29) and 92 (10) (a) in a combined operation; 2) the regulation of Trade and Commerce, section 91 (2); 3) the clause of "Peace, Order and good Government" (POGG), section 91, in the preamble; 4) the Treaty Making Power, section 132; 5) the regulation of Navigation, Shipping and Fisheries, sections 91 (10) and 91 (12); and, 6) the Taxation Power, section 91(3).²⁰³ This thesis argues that these powers are subject to interpretation, although the water legislative power division clearly highlights the shared

resources; its effect should be more pronounced with respect to those resources in which provinces do not exercise proprietary rights (for example, freehold oil and gas)." *ibid.*

²⁰⁰*Supra* note 152.

²⁰¹Anthony Scott notes that "perhaps" it is "the most important provincial legislative power over allocation " of its waters, *supra* note 163, at 15. Owen Saunders also notes that "the main root of provincial authority with respect to water rests in these proprietary rights" *supra* note 172, at 467.

jurisdiction over water management for federal and provincial governments.

As noted the shared jurisdictional issues remain unclear, especially over “shared water resources” such as those in a watershed that can be a common place for BWR projects, since waters are transferred from their basin of origin to everywhere, including intra-basins. “It is often the case that the rational units for management of river systems is the watershed [and] this rarely conforms to political boundaries.”²⁰⁴ That is, it is difficult to have “accommodated the legal realities of fragmented jurisdiction to the physical realities of river systems;”²⁰⁵ for instance, in BWR projects that mostly involve water movement over frontiers.

This thesis relates such shared jurisdiction effects to the different kinds of BWR: a) **intra-provincial**, b) **inter-provincial**, and c) **international**.²⁰⁶

a) **Intra-provincial**

As noted earlier, even if a BWR project is in provincial waters, it might have federal intervention. In this situation, the strongest constitutional heads that the federal government could exercise will be those related to Fisheries or/and Navigation powers.²⁰⁷ These powers can

²⁰²S. 91 (12), and s. 91, respectively, *supra* note 152.

²⁰³Anthony Scott, *supra* note 163, from 12 to 14.

²⁰⁴Owen Saunders, *supra* note , at 465.

²⁰⁵*Ibid.*

²⁰⁶Classification established in the item 1.5 of Chapter One in this thesis.

²⁰⁷Sections 91(10) and 91(12), *supra* note 152.

be used to protect an aquatic ecosystem against harmful BWR effects, guaranteeing fish habitat and flow and stream levels.

Fisheries power “holds significant implication for regulation of water quality and even quantity insofar as it is related to effects on fisheries.”²⁰⁸ Some BWR effects²⁰⁹ are the potential pollution effects from construction and maintenance of projects, and the possible transference of species from original habitats. These give reasons enough for the federal government’s requests for control. Federal participation regarding fisheries control could be included in the BWR environmental impact study or even in to legislation about BWR, since it relates to fisheries protection.

In addition to the Fisheries matter, the Navigation concern could authorise federal governmental participation in BWR intra-provincial waters. Navigation control includes licensing for dams, bridges and other facilities including in BWR projects. For instance, the bottling facilities included in the Gisborne Project.²¹⁰

On the other hand, the weakest powers for granting federal interference would be POGG and Trade and Commerce.²¹¹ Unlike Fisheries and Navigation powers, POGG and the Trade and Commerce Powers are more general, and are weaker in relation to BWR. POGG “may support certain intervention by the federal level in specific issues”²¹² but it is

²⁰⁸Owen Saunders, *supra* note 172, at 468.

²⁰⁹See Chapter One.

²¹⁰This project is described in Chapter One, *supra* notes 37 and 39.

²¹¹The pre-amble of Section 91 and Section 91(2), *ibid.*

²¹²Owen Saunders, *supra* note 172, at 468.

difficult to justify the federal intervention in water management reserved to the provinces, as when BWR is intra-provincial. The same reason applies to the federal Trade and Commerce Power.

b) Interprovincial

As in intra-provincial waters, BWR projects in inter-provincial waters might still have federal intervention. That is, the federal government may exercise the powers of specified heads of the *Constitution Act*, such as Fisheries or/and Navigation,²¹³ as explained above. However, regarding BWR in inter-provincial waters:

the more important issue is whether the federal government may exercise some additional jurisdiction in the case of interprovincial rivers; that is, whether the very fact that a river crosses provincial boundaries in some way expands the constitutional mandate of the federal government. Conversely, are the powers of a province to deal with its waters in some way restricted by the fact that it is affecting an interprovincial watercourse?²¹⁴

Unfortunately, the exact nature of the federal role in the management of inter-provincial waters has not been addressed clearly by the parliament or the courts. Even “the leading case in the area — the *Interprovincial Co-operatives* case — is less than a model of judicial clarity.”²¹⁵ Therefore, these possible jurisdictional conflicts and consequent compensation costs should be taken into account in BWR projects in inter-provincial waters, as noted in previous commentaries about this case.

²¹³*Ibid.*, at 469.

²¹⁴*Ibid.*

²¹⁵*Ibid.*, at 470. See in this chapter previous commentaries about this case.

c) International

BWR projects in international waters usually involve international water transfers. This situation appears the easiest to answer in terms of jurisdictional issues because a federal governmental involvement should be assured, by reason of involving an international boundary. The federal government is empowered to implement its obligations regarding boundary and trans-boundary waters, according to s. 132 of the *Constitution Act, 1867* and the *International Boundary Waters Treaty*.²¹⁶

“Since Canada is a federal country, the constitutional authority to make a treaty may **differ from** the locus of power to **apply** it.”²¹⁷ However “under section 132 of the *Constitution Act, 1867*, the federal government is given **the power to implement treaties** concluded by the United Kingdom on Canada’s behalf – including the Boundary Waters Treaty.”²¹⁸ Thus the federal government has the authority under treaty powers as to whether or not it infringes on the normal legislative or proprietary rights of the provinces.

On the other hand, there are those who dispute the provincial capacity to make a treaty. “Proponents of a provincial capacity at international law have suggested that the prerogative powers of the Lieutenant-Governor include the power to carry on foreign affairs or at

²¹⁶R.S.C. 1985, c. I-17. Regarding BWR, there is a bill to amend this act, *infra* note 224: see also commentaries below.

²¹⁷Hugh M. Kindred, General Editor and others, *International Law: Chiefly as Interpreted and Applied in Canada*, 5th ed. (Toronto: Emond Montgomery, 2000), at 180 [emphasis added].

least to enter into treaties in areas of provincial legislative jurisdiction.”²¹⁹
 This suggestion can be a presumption for Canadian provinces to make treaties over BWR issues, since water allocation is a provincial legislative jurisdiction.²²⁰

The federal government has exercised the authority to make and implement international agreements. The powers of the federal government established in section 132 of the constitution do not support the above view of the Lieutenant-Governor’s prerogative powers. There is a little authority to support the presumption of these powers, including foreign affairs and treaties in areas of provincial legislative jurisdiction, neither has there been any delegation of such prerogative powers “nor is there any authority for the assertion that the provinces received any part of the royal prerogative with respect to foreign affairs and the power to make treaties.”²²¹ This suggests that the provinces themselves cannot make any treaties, even those that affect matters within provincial jurisdiction.

²¹⁸Owen Saunders, *supra* note 172, at footnote 12 at 478 [emphasis added].

²¹⁹Moreover, Kindred notes that “historically the powers of the Lieutenant-Governor have been the source of considerable dispute, but two decisions of the Judicial Committee of the Privy Council (*Liquidators of the Marine Bank of Canada v. The Receiver-General of New Brunswick*, 1892, and *Bonanza Creek Mining Company Limited v. The King*, 1916) have been cited as establishing both that the government of each province represents the Queen in the exercise of her prerogative regarding all matters effecting the rights of the province, and, more particularly, that external prerogatives are among those which have devolved upon the Lieutenant-Governors in legislative fields assigned to the provinces,” *supra* note 217., at 183.

²²⁰Besides water allocation as a primary provincial jurisdiction, there are provincial interests in foreign issues. In practice, the provincial arrangements with foreign states cannot be denied. See commentaries about the desire of the Premier of Newfoundland to allow BWR, item 1.8 of Chapter Five.

²²¹Kindred, *supra* note 217, at 184.

Certainly it is hard to imagine an international BWR project that is not under federal authority, but this authority should be exercised according to provincial consent, since it is purely a water allocation issue, within provincial jurisdiction. Moreover, the BWR's potential damage calls for provincial evaluation of economic, social and ecological impacts. Even though the constitutional rules do not foresee such provincial participation, it is a challenge to rise to. Much negotiation can be required, but by principle the law cannot refuse or renounce any complex legal issues: if asked, courts must create solutions.

At present, no Canadian provincial government has authorised or been disposed to allow international BWR,²²² so there has been no need for the federal government in its international agreements to act contrary to any provincial positions.²²³

Currently, the federal government's attitude regarding BWR international issues is in *Bill C-6*,²²⁴ an act to amend the *International Boundary Waters Treaty Act*. This

bill would provide for a clearer Act and more effective implementation of the 1909 Treaty relating to Boundary Waters and Questions arising along the Boundary between

²²²For respective water Acts of Alberta, British Columbia, Manitoba, Newfoundland, Nova Scotia, Ontario, Quebec see *supra* note 19.

²²³Even if the BWR moratorium is or is not a wise water policy tool. The moratorium effects under water scarcity problems is commented in Chapter Six.

²²⁴*Bill C-6*, An Act to amend the *International Boundary Waters Treaty Act*, First Session, Thirty-seventh Parliament, Ottawa, 2001 (1st reading 5 February 2001, the House of Commons of Canada). The previous bill died on the Order Paper when Parliament was dissolved October 22, 2000, the *Bill C-15*, An Act to amend the *International Boundary Waters Treaty Act*, Second Session, Thirty-sixth Parliament, Ottawa, 1999-2000 (1st reading 22 November 1999, 2nd reading 2 March 2000, debate 20 October 2000, the House of Commons of Canada).

Canada and the United States (commonly referred to as the Boundary Waters Treaty) by: a) prohibiting the bulk removal of boundary waters from the water basins in which they are located; b) requiring persons to obtain licenses from the Minister of Foreign Affairs for water-related projects in boundary or transboundary waters that would affect the natural level or flow of waters on the United States side of the border, and c) providing clear sanctions and penalties for violation.²²⁵

These bill provisions meet the provincial BWR directions. However, according to the constitutional rules and the current dispositions and interpretations of *the Boundary Waters Treaty*, BWR in international waters already has a clear and defined jurisdiction, which is federal.

In addition to the proposal of *Bill C-6*, the federal government also announced a joint reference with the United States to the International Joint Commission (IJC) to “study the effects of water consumption, diversion and removal including for export from boundary waters, with an initial emphasis on the Great Lakes.”²²⁶ On March 2000, the IJC submitted to both governments a final report. Among other things, the report concluded that:

- 1) Water is a non-renewable resource;
- 2) If all interests in the [Great Lakes] Basin are considered, there is never a ‘surplus’ of water. Every drop of water has several potential uses...; and,
- 3) Provisions of the [NAFTA and WTO] agreements, including the [GATT] do not prevent Canada and the U.S. from taking measures to protect their water resources and preserve the integrity of the Great Lakes Basin ecosystem

²²⁵Library of Parliament, *Bill C-15: An Act to Amend the International Boundary Waters Treaty Act (Background Paper)* by David Johansen (Ottawa: Library of Parliament, 1999). It is available on line <[http:// dsp-psd.pw.gc.ca/dsp-psd/Pilot/LoPBdP/LS/362/362c15-e.htm#\(2\)txt](http://dsp-psd.pw.gc.ca/dsp-psd/Pilot/LoPBdP/LS/362/362c15-e.htm#(2)txt)>

²²⁶*Ibid.*, at 3.

so long as there is no discrimination by decision makers against individuals from other countries in the application of those measures. Canada and the U.S. cannot be compelled by trade laws to endanger the waters of the Great Lakes ecosystem.²²⁷

The NAFTA is not a specific international agreement on boundary waters but one on free trade, and its impact on water remains questionable. This discussion is about whether or not the federal government could assume international obligations to sell Canadian waters; but the trade laws do not endanger Canadian and American waters, as noted by the IJC and explained in Chapter Three of this thesis. So a BWR cannot be required under NAFTA dispositions if it affects the integrity of the aquatic ecosystem.

1.2.2. Brazil

There is neither a specific legal or administrative definition of bulk water removal, but it can be inferred from the Brazilian water laws as being a use of water that "...affects the flow, quantity, or quality of water existing in a body of water."²²⁸ The BWR jurisdiction issues are also inferred from the general aspects of water property, legislative power and management jurisdiction in the Brazilian system.

Brazilian States have jurisdiction over BWR based on water property rights (Article 26),²²⁹ on supplementary legislative jurisdiction

²²⁷The IJC's *Final Report on Protection of the Waters of the Great Lakes*. International Joint Commission, on-line <<http://www.ijc.org/ijcweb-e.html>> .

²²⁸Article 12, item V, Law 9344, *supra* note 22, see also Chapter 1.

²²⁹The States' water property: I. superficial or underground waters, whether flowing, emerging or in reservoirs, with the exception, in the latter case, as set forth in the law.

(Article 22), and on the water administrative jurisdiction in Article 23 of the Federal Constitution.²³⁰ In the same way that Canadian provinces have competence for BWR, based on jurisdiction over “Property and Civil Rights in the Provinces” (s. 92(13)),²³¹ when it does not involve an international watershed or national importance the Brazilian States own the water resources, but they do not have uncontrolled discretion to manage them because of certain constitutional rules. Article 26 establishes the States’ water property: “I. superficial or underground waters, whether flowing, emerging or in reservoirs, with the exception, in the latter case, as set forth in the law, of those resulting from works carried out by the Republic.”²³²

Regarding this latter stipulation:

water resources belong under state authority when they are flowing, but are under federal authority when accumulated in storage facilities owned by the Union, even if the storage facility is located on state territory. Concessions to use such water have thus to be obtained from the Union. Nevertheless, the state, together with the Union, has the right to register and control the withdrawal (Federal Constitution, Article 23, § 11).²³³

This is a typical example of shared jurisdiction for water, and a common situation is the dry regions of northeast Brazil where the

of those resulting from works carried out by the Republic; II. areas, on ocean and coastal islands, which are under their domain, excluding those under the domain of the Republic, Municipalities, or third parties [such as citizens with federal licences under federal water]; and, III. river and lake islands which do not belong to the Republic. Article 26 of Federal Constitution, *supra* note 150.

²³⁰*Ibid.*

²³¹*Supra* note 152.

²³²Federal Constitution, *supra* note 150 [emphasis added].

²³³*Supra* note 1, at 116.

Department of Works Against Droughts (*Departamento Nacional de Obras Contra as Secas-DNOCS*) has constructed a large number of dams and reservoirs as mitigating mechanisms for the droughts. "These storage works are still federally-owned and decisions about their use fall under the authority of the Union, with DNOCS as its executing agency. Only after the water is released is it under state control."²³⁴ Some Northeast States are negotiating with DNOCS about a gradual transfer of its storage works into state administration, which would give them control of the water; for instance, in Ceara State. This is a delicate negotiation process since DNOCS would lose not only water control but also political influence in the region.²³⁵

Unlike Canadian provinces, Brazilian states have only a supplementary legislative jurisdiction,²³⁶ even if they own the body of water within their territories.²³⁷ Because the federal government has exclusive legislative power for waters,²³⁸ the states can legislate for their waters but

²³⁴*Ibid.*

²³⁵The storage negotiation and others state water policy and control problems are studied in details in Chapter Five; for instance, most water uses and stakeholders are confused about which government agency is in charge for concession of uses in these reservoirs.

²³⁶ Article 22 of Federal Constitution, *supra* note 150.

²³⁷ Article 26 of Federal Constitution, *ibid.*, see also note 280, all of this State water property jurisdiction sounds contradictory, since the Union centralises, *i.e.*, has the whole legislative jurisdiction, while States manage their water properties without legislative power, because jurisdiction remains exclusively with the Union.

²³⁸Item IV of the Article 22 and article 21 of Federal Constitution, *ibid.* The Union has exclusive jurisdiction for water resources according to the Federal Constitution, which requires, first, a general jurisdiction to "establish" a water resource management system (Article 21, XIX), and then a water jurisdiction which defines concepts such as the classification and denomination of bodies of water and of priorities in the use of water resources. However, by a unique paragraph, Article 22, the States can legislate about specific matters related to water resources, since a federal supplemental law authorises this. In other words, the State water laws exist but are limited by the contents of federal

only within the limits established by the federal water law.²³⁹ Therefore, the federal government has the exclusive legislative power to establish the BWR general rules that states have to consider when they do their specific BWR laws.

However, although the federal government has exclusive legislative power regarding waters, it has ownership only of specific waters as established in the Federal Constitution.²⁴⁰ In Brazil, the major watersheds are federal, such as the *Amazonica*, *Parana*, *Sao Francisco*, *Uruguai*, *Paraguai*, and *Tocantis* river basins. That means that BWR projects in any of these major Brazilian river basins are under federal control because they belong to federal rivers; for instance, the current Sao Francisco River water transfer plan.

law: for example, in establishing a water permission system, concerning standards for the quality of water or criteria for the classification of a freshwater unit, a State can never create law that is different from federal law.

²³⁹The current federal water law is the Law 9433/97, *supra* note 18.

²⁴⁰The Constitution establishes that water property pertains to the Union, as follows, in its Article 20, items III, IV, V, VI, VII and VIII, respectively: 1-the lakes, rivers, and any water courses of any kind on lands owned by the Republic, or which water more than one State, serve as borders with other countries, or run into or from a foreign territory, as well as bank lands and river beaches; 2-river and lake islands in zones bordering on other countries, sea beaches, ocean and shore islands, the latter excluding the areas referred to in Article 26 II; 3 natural resources of the continental shelf and of the exclusive economic zone; 4-territorial waters; 5- tide lands and those added to them; and, 6- hydraulic energy potentials, *supra* note 150. Regarding energy potentials, Article 176 of the Constitution establishes that hydraulic energy represents property as separate from the soil, for purposes of exploitation or use, and belong to "the Republic", which means the national Union. In addition the same article establishes that the exploitation of a renewable energy potential of small capacity does not require an authorisation or grant. That is another difference between Canadian and Brazilian systems; in the first the provinces have ownership of their hydropower.

In this centralised legislative system and de-centralised ownership system, water management involves **both federal and state governments**.²⁴¹ As in Canada, water management is a shared jurisdiction. Consequently, it presents similar issues, especially jurisdictional issues, for the same reasons, such as water flow effects, watershed unit management, and so on. Furthermore, BWR projects in state waters would be allowed if they did not violate their own water laws and also did not violate the federal water rules; that is, if that did not “affect the flow, quantity, or quality of water existing in a body of water.”²⁴²

Regarding BWR projects in inter-state and beyond-state border waters, as in Canada the Brazilian federal government has constitutional powers under navigation (Article 21, item XXI) and its foreign relation

²⁴¹The Union already exercised an exclusive jurisdiction when it established the National System of Water Resource Management and the National Policy of Water Resource by Federal Law 9433/97, *supra* note 18. However, the Law 9433/97 establishes in Article 33 that the National System of Water Resources Management is a composite of: a) The National Council on Water Resources; b) The State and Federal District Councils on Water Resources; c) The River Basin Committees; d) The entities at the Federal, State, and municipal levels whose respective areas of competence are related to the management of water resources; and, f) The Water Agencies. That is, this law decentralises the administration of water resources and foresees participation in decision-making with the States and with citizens as members of the National Water Resources Council. The latter is composed of each State's Water Resources Council and its Water Resources Citizen Organisation. But the Union still prevails in its power over water. There are those who say that the Union's legislative jurisdiction is exercised by the National Congress (Parliament), which expresses the people's will. In a representative democracy, not everybody's will is present, especially in a country like Brazil where harsh economic and social divisions unfortunately are endemic and historic characteristics.

²⁴²Article 12 (Item V) of federal law, Law 9433/94, *supra* note 18.

jurisdiction (Article 21, I), as well as legislative foreign and interstate trade powers (Article 22, VIII) for intervening in these projects.²⁴³

As in Canada, the Brazilian federal government has exclusive authority over international laws,²⁴⁴ however, they have to be approved and ratified by the National Congress.²⁴⁵ By the constitutional rules, states do not have the capacity to establish international laws. Therefore, any international law regarding BWR would be made according to federal government directions. Furthermore, any BWR rule approved and ratified by the National Congress, in accordance with procedural rules, would be integrated into domestic law.

In Brazil the federal government therefore has the primary authority over BWR projects, with only a few supplementary powers reserved to the states. However, the states and third parties could claim the clean up of the water environment or compensation in cases of damage resulting from a federally authorised BWR project.

²⁴³ In the Federal Constitutional, respectively, in the Article 21(item XXI), Article 21. (item I) and Article 22 (item VIII), *supra* note 150.

²⁴⁴ Article 21 (I) of the Federal Constitution, *supra* note 150. The relationship between the international law and the domestic law is presented below.

CHAPTER THREE

INTERNATIONAL LAW ISSUES FOR BULK WATER REMOVAL

“The international law has internal as well as intergovernmental applications,”²⁴⁶ in either of its spheres private and public.²⁴⁷ It is essential to know which kind of relationship there is between the international law and the domestic law,²⁴⁸ and which of these laws prevail when there is a conflict between them.

The legal question concerns to know the extent of the direct applicability or direct effect of international law in the domestic legal system. Usually, states accept the international law as part of their domestic system through different approaches, which can be more or less receptive to international law. “Ultimately, it is the constitutional framework of a state that determines the degree to which international law is applied in any given circumstance.”²⁴⁹ However, the international policy issues are beyond the aim of this thesis, and noted for others who wish to

²⁴⁵ Article 49 (Item I) of the Federal Constitution. *supra* note 150, see also *infra* note 327.

²⁴⁶ Kindred, *supra* note 217, at 165.

²⁴⁷ J. G. Castel explains that “it is traditional to use the expression ‘conflict of laws’ or ‘private international law’ to describe the body of principles and rules applicable to transnational cases involving private relationships which contain legally relevant foreign elements. Private international law or conflict of laws principles are rules that result from the existence of different legal systems in the world, whereas, this is not so in the case of public international law. Public International law seeks primarily to regulate the relations between different sovereign states and international organizations; and, based as it is on international conventions, the customary rules, and the judgments of the International Court of Justice, it is, in theory at any rate, the same everywhere.” *Canadian Conflict of Laws, Third Edition* (Toronto and Vancouver: Butterworths, 1994), at 3.

²⁴⁸ Celso D. de Albuquerque Mello, *Curso de Direito Internacional Publico*, 1 Vol., 11 ed. ver. e aum., (Rio de Janeiro: Editora Renovar, 1997), p.103-117[interpretation and translation by Sandra Cilce De Aquino]; Kindred, *supra* note 217, at 165.

go forward in research related to BWR international issues. The major discussion on BWR international issues is twofold: 1) about jurisdictional issues under BWR projects in international waters²⁵⁰ and 2) about issues related to conflicts between a statute (federal or provincial/state) and specific treaty obligations, especially regarding international water trade and international protection of the environment. So, locating BWR international issues, the following items are briefly presented: 1) Treaty and Domestic Law Issues, and 2) International Trade.

1. Treaty and Domestic Law Issues

The previous constitutional law section discussed the jurisdictional issues under treaty powers.²⁵¹ What remains is the discussion about the integration of the international law with the domestic law and how this is accomplished.

1.1 Canada

Regarding a treaty, Canada is “transformationist,” that is “treaties must be enacted into law by Parliament before they will affect private rights.”²⁵² In Canada, most treaties have to be implemented by legislation: “a treaty made by the federal government will bind Canada as a country,

²⁴⁹Kindred, *supra* note 217, at 165.

²⁵⁰Such as the treaty making constitutional power previously studied in Chapter Two.

²⁵¹Recalling that the authority to make and to implement treaties is under federal jurisdiction in both Canadian and Brazilian systems according their constitutions.

²⁵²Kindred, *supra* note 217, at 166. This procedure follows the British legal tradition. Furthermore, the integration of the international law will be influenced by “one’s theoretical departure point, whether one is an ‘adoptionist’ or ‘transformationist’ in outlook,” at 165. Kindred notes that arguments have been made that “Canada is adoptionist in respect to customary international law and transformationist in respect to conventional law.” at 166.

but its provisions do not affect internal law until they have been implemented by legislation.”²⁵³

In case of a conflict between Canadian statutes (federal or provincial) and an international treaty, both federal and provincial legislatures, in exercise of their supremacies, may legislate in violation of any form of international law, as studied previously in Chapter Two.²⁵⁴ The supremacy of domestic laws is established in legal cases such as *Swait v. Board of Trustees of Maritime Transportation Unions*²⁵⁵ and the *Arrow River*.²⁵⁶ The first case rules that “where Parliament has clearly legislated on some matter within its jurisdiction, the validity of that legislation cannot be affected by external treaties.”²⁵⁷ The second case establishes that “the province of Ontario could legislate in violation of the Webster-Ashburton Treaty in the *Arrow River* case itself.”²⁵⁸

Moreover, in the *Arrow River*²⁵⁹ case, resolving the “apparent” conflict between the *Webster-Ashburton Treaty of 1842* and the *Lakes and Rivers Improvement Act*,²⁶⁰ Lamont J. points out that “the treaty in itself is not equivalent to an Imperial Act and, without the sanction of Parliament,

²⁵³*Ibid.*, at 194.

²⁵⁴Yet about the conflict between international laws and domestic laws Kindred indicates the following literature, *supra* note 217, at 180: T. A. Levy, “Provincial International Status Revisited” (1976-77), 3 Dal. L. J. 70; R. St. J. Macdonald, “International Treaty Law and the Domestic Law of Canada” (1975), 2 Dal. L. J. 307; and E. McWhinney, “The Constitutional Competence Within Federal Systems as to International Agreements” (1964-68), 1 Can. Legal Studies 145.

²⁵⁵(1967), 61 D.L.R. (2d) 317, 322 (Que. C. A.).

²⁵⁶[1932] 2 D. L. R. 250 (S.C.C.)

²⁵⁷Kindred, *supra* note 217, at 180.

²⁵⁸*Ibid.*

²⁵⁹*Arrow River*, *supra* note 314.

the Crown cannot alter the existing law by entering into a contract with a foreign power.”²⁶¹ In British countries, an international treaty is a contract that binds rights and obligations upon the contracting states but this agreement does not become an enforceable law in the Courts.²⁶² The enforcement of these rights and obligations requires implementation or sanction by legislation.²⁶³ This legislation is required principally for a treaty that involves a change in existing law.²⁶⁴

As a result of this Canadian legal approach, any international treaty concerning BWR needs legislation to be implemented. Since there are already BWR provincial rules established through water statutes,²⁶⁵ a forthcoming international law regarding BWR requires legislative sanction; however, its parliamentary approval is not enough to affect these existing laws. This means that the provincial BWR moratorium rules established by some Canadian provinces will prevail if an international law opposes them.²⁶⁶ Only their provincial laws can change their own positions

²⁶⁰ R.S.O. 1927, c. 43.

²⁶¹ *Arrow River*, *supra* note 314, at 259.

²⁶² Paraphrased, *Arrow River*, *ibid*. The same approach is pointed out by Smith in the *R. v. Canada Labour Relations Board according to Kindred*, *supra* note 217, at 195.

²⁶³ *Arrow River*, *supra* note 314, at 259.

²⁶⁴ *Kindred*, *supra* note 217, at 195.

²⁶⁵ *Supra* note 19.

²⁶⁶ A different situation happened in the *Snowcap* case. *supra* note 108. The conflict in this case did not involve a conflict between international law and domestic law. It involved refusal of a water licence that the applicant characterized as a breach of contract. As noted earlier, Sun Belt asked for damages for negligent misrepresentation, intentional interference with contractual relations and breach of contract. However there was not a breach of contract between Sunbelt (an American Corporate) and the B.C. government for several reasons: 1-there were no international rules established between them; 2-the licence held by Snowcap, a joint-venture partner of Sunbelt, did not give the right to use or access water in the amount that Sunbelt was seeking. In addition, the application to renew this licence with a different amount was denied, and it did not

regarding BWR. For instance, U.S. Governors of the eight Great Lakes states want a binding agreement with their Canadian counterparts by 2004 to protect the shared waters against exports.²⁶⁷ If this agreement meets the Canadian provincial BWR rules, it can have legal efficacy; otherwise, it cannot change these existing provincial laws.

No forthcoming treaty will affect the Canadian provincial water statutes that already regulate BWR, as in Alberta, British Columbia, Manitoba, Newfoundland, Nova Scotia, Ontario, and Quebec.²⁶⁸

1.2 Brazil

Brazil adopted the *monismo nacionalista* approach, which accepts international law integration to domestic law but not in the superior jurisdictional hierarchy.²⁶⁹ This approach advocates the primacy of the Constitution, and that international law is legally integrated with the same level and degree of legal efficacy of an ordinary law enacted by a State.²⁷⁰

grant any water rights. Furthermore, even if the license granted rights to a large-scale amount of water, which would be lost with the new BWR moratorium rules, it would still hold no rights against the B.C. government because this license could be suspended and revoked by a new law or because of a failure under the license's conditions. Moreover, a water licence is neither a contract nor a property right but merely an administrative act.

²⁶⁷Katherine Rizzo. *supra* note 26. The text of the governor's proposal is available on line <<http://www.cglg.org/projects/water/annex2001.pdf>>

²⁶⁸For respective water laws, *supra* note 19.

²⁶⁹Jose Francisco Rezek, *Direito Internacional Publico: Curso Elementar*, 6 ed. (Sao Paulo: Saraiva, 1996) p.5 [translated by Sandra Cilce de Aquino].

²⁷⁰Federal Supreme Court of Brazil's decision: Acordao no. 662-2, do processo de Extradicao julgado pelo Tribunal Pleno do Supremo Tribunal Federal (STF), em decisao majoritaria, aos 28.11.96 (DJ, 30.05.97, p. 23.176), rel. Min. Celso de Melo. This law has characteristics of infra-constitutional law, CF artigo 102, III, b. However, there is a debate that the international treaty related to human rights is integrated with constitutional law status; see the following literature: Flavia Piovesan, *Direitos humanos e o direito constitucional internacional*, 3 ed. (Sao Paulo: Max Limond, 1997):

In the Brazilian system, an international treaty has to have the approval and ratification of the National Congress by lawful decree before it is integrated in the domestic legal system, according to the Federal Constitution.²⁷¹ Therefore, if this required legal procedure is not accomplished or is improperly executed, the international law will be an unconstitutional rule.

Even an international law properly approved and ratified can conflict with the domestic law in two aspects: temporal and material. Since this international rule has equal legal status to other laws, if they are in conflict the newest will prevail. The latest law revokes the oldest, and the specific rule revokes the general one.²⁷² In terms of its material aspects, an international law properly integrated into the Brazilian legal system can never contradict the constitutional rules. The integrated rules must be in harmony with Brazilian constitutional rules.

Regarding boundary waters, unlike Canada, Brazil has frontiers with several countries. Its geographical characteristics can differ according to their international relationships and treaties. At present, Brazil takes part in the following international treaties related to watercourses, lakes and

Antonio Augusto C. Trindade, *Tratado de Direito Internacional dos Direitos Humanos*, 1 ed., vol. 1 (Porto Alegre: Sergio Antonio Fabris Editor, 1997).

²⁷¹In the Article 49 (item I): "to resolve conclusively on international acts, agreements, or treaties which involve charges or commitments against the national patrimony," *supra* note 150.

²⁷²Carlos Maximiliano. *Hermeneutica e Aplicacao do Direito*, 16 ed. (Rio de Janeiro: Forense, 1997) . p. 135.

groundwater: *Treaty of the Plata River Basin*,²⁷³ *Treaty for the Use of Shared Water Resource of the Bordering Areas of the Uruguay River and its Tributary, the Pepiri-Guacu*,²⁷⁴ *Treaty of Itaipu*,²⁷⁵ and the *Amazon Cooperation Treaty*.²⁷⁶ None of these bilateral, multilateral and regional treaties directly or specifically addresses large-scale water transfers.

Therefore, to establish an international arrangement about BWR across Brazilian borders is not as easy as on the Canadian-American frontier. By the Brazilian *monismo nacionalista* approach, if the country assigns and ratifies an international treaty following its constitutional legislative procedures, it will be legally bound to execute this obligation. That means that any BWR rules stated in international law must be

²⁷³ A treaty among Argentina, Bolivia, Brazil, Uruguay and Paraguay. It was celebrated on 22 and 23 April 1969 in Brasília, Brazil, based on the Buenos Aires Declaration (23 February, 1967) and the Santa Cruz De La Sierra Proceeding (20 May 1968), in which the utilisation of its international rivers was the object of Assuncion Declaration, which was integrated to Brazil's system by the Legislative Decree nº 197, 25 September 1991 and Decree nº 359, 21 November 1991. The funding for studies, projects, programs and undertakings to promote the harmonic development and the physical integration of this watershed was approved by the Legislative Decree nº 85, 25 November 1974 and Decree nº 78.620/76. Regarding the institutional organization for an integrated management of the Plata River Basin water resources, see "Gerenciamento de Recursos Hídricos: uma Abordagem para o Mercosul", an unpublished paper by Ciro Loureiro Rocha and Roberto Moreira Coimbra (rcoimbra@aneel.gov.br). The last author is an officer from the National Electric Energy Agency (Agencia Nacional de Energia Eletrica- ANEEL).

²⁷⁴ A treaty between Brazil and Argentina celebrated on 17 May 1980 addressed utilisation of their international rivers, including hydropower and navigation. However, any undertaking must preserve the environment, fauna, flora and water quality. In Brazil, this treaty was approved by the Legislative Decree nº 82/82 and enacted by Decree nº 88.441, 29 June 1983.

²⁷⁵ A treaty between Brazil and Paraguay whose major goal is the utilisation of hydropower of Parana River.

²⁷⁶ A treaty among Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam and Venezuela celebrated on 3 July 1978. The goal of this treaty is to promote the harmonic development of these related Amazon territories. Regarding the utilisation of their natural resources, this treaty establishes the sovereignty of each State and that no restrictions may differ from international law. In Brazil, it was approved by the

properly ratified to be integrated and have legal efficacy in Brazilian domestic law. Moreover, the federal government would have rights and duties under any international law regarding BWR. It is in federal hands to establish BWR rules at the international law level, by which the states will be limited.

2. Trade Issues

Not only water transfers but also water markets²⁷⁷ have become policy mechanisms for water allocation, but these mechanisms have also been criticised regarding efficiency.²⁷⁸ A water trade involves and depends on different aspects, such as public acceptance²⁷⁹ and certain formal institutional arrangements. However, defenders of a free water market advocate individual rights because of their transferability in water trades.

Legislative Decree n° 68, on 18 October 1968 and enacted by Decree n° 85.050, on 18 August 1980.

²⁷⁷ The term water trade and water market are used as synonyms.

²⁷⁸ See Chapters Five and Six.

²⁷⁹ As noted in Chapters One and Two. Moreover, "because of public resistance and governmental opposition to large continental water transfers, it is unlikely that the neighboring countries will gain from water trading opportunities that may be available under the North American Free Trade Agreement. Canadians appear willing to forego possible benefits of such trades in order to ensure the continuing integrity of the current water resource regime of their country," Gary Fritz and Matthew J. McKinney, "Canadian Water Export Policy and Continental Water Marketing," *Continental Water Marketing*, edited by Terry L. Anderson (San Francisco: Pacific Research Institute for Public Policy, 1994), at 89. A survey to compare and contrast two areas- the Grande Valley of western Colorado and the San Joaquin Valley portion of Kern County, California "suggest that the ability to implement reforms in regional water utilization patterns is influenced by specific social and historical contexts within which local populations define and utilize scarce water resources", and "residents in these two distinct areas of the West had strong reservations about free markets as a means of allocating water", Sean P. Keenan, Richard S. Krannich and Michael S. Walker, *supra* note 19, at 199.

Certainly, the transferability of water rights is important but it is not all that matters for water trade to exist.²⁸⁰

As noted earlier, both Canadian and Brazilian constitutions do not establish private water ownership, but conversely assert water as a public ownership vested at federal and provincial/state levels. Although it is possible through institutional changes to establish a water trade, as Kemper notes, “the state owns the rights and the question arises as to who is going to receive the initial property rights before trading is allowed. Possible mechanisms for initial allocation are *e.g.* auctions where the highest bid wins (Australia), allocation based on historical consumption (Chile) or based on the ability to make beneficial use of the water (Northern Colorado Water Conservancy District/USA).”²⁸¹ However, these arrangements have costs.

Besides uncertain success, implementation requirements and costs, water trades have been requested because of the economic value of water. Water can be a profitable commodity.

Furthermore, water economic values have been one reason for disputing water jurisdictional management. Sometimes a loss of water jurisdiction management is wasted money. “At a March, 1998, UN conference in Paris, governments proposed to turn water into a global

²⁸⁰As Scott and Kemper explain there are other requirements for a water trade besides the transferability of water rights. Anthony Scott, “International Water Marketing: Nations, Agencies, or Individuals?”, *supra* note 83, at 167-175, and Karin E. Kemper, *supra* note 1, 51-55. Water market as a policy approach is better discussed in Chapters Five and Six.

commodity, driven by market forces and higher prices and called for an enlarged role for the private sector. Water is the last infrastructure frontier for private investors.²⁸²

Privatising water looms as the potential mega-industry of the next decade, with investment in the tens of billions of dollars.²⁸³ The largest private water companies have their headquarters in France and England, but they operate around the world, such as Vivendi and Suez Lyonnaise des Eaux, which had total sales in 1995, of \$ 55 billion and \$ 33 billion, respectively.²⁸⁴

However, some use of water is economically viable but not environmentally sustainable. Moreover, who will decide whether economic or ecological values in water use are the priority in its management? The market itself? Economic interests often prevail over ecological ones.

²⁸¹ *Supra* note 1. at 52.

²⁸² Maude Barlow, "Private Drain on Public Water", [unpublished], archived at the Council of Canadians, at 11. For further information, e-mail: <inquiries@canadians.org>.

²⁸³ *Ibid.*, at 06. See Alexander Orwin, *The Privatization of Water and Wastewater Utilities: An International Survey* (Environment Probe, 1999) on line <<http://www.nextcity.com/EnvironmentProbe/pubs/ev542.html#South America>>. This survey "covers all countries in South America and selected countries in most regions of the world, excluding Canada and the United States. The degree of water privatisation in these two countries is minimal", *ibid.* Besides these examples of minimal privatisation, this survey mentions cases where the privatisation of water is allowed only for national companies; for instance, in France, "the French have not allowed foreign companies to enter the water and sewerage sector, so 96 per cent of the market is dominated by three large domestic companies: Lyonnaise des Eaux, serving 18.8 per cent of communes, Generale des Eaux, serving 36.7 per cent, and SAUR, serving 40 per cent," *ibid.* See also Henry Buller, "Privatization and Europeanization: The changing face of water supply in Britain and France", 39 (4) *Journal of Environmental Planning and Management*. (1996).

²⁸⁴ The Council of Canadians, "International Trade Considerations: Top Ten Global Water Corporations", in *Options Paper for Canadian Council of Minister of the Environment* (19 May 1999)[unpublished], archived at The Council of Canadians.

Not only the market can be profitable, but also a number of economic factors can come into play in any water management system. For example,

...[t]he fiscal impact of water policies is an important criterion, both for general macro-economic management and for the proper funding of water and sanitation provision. A sustainable policy would be one having a positive impact on the finances of central or local government, *e.g.*, from a tax, price increase, charge, a reduction in subsidies, or the avoidance of major capital spending. It should likewise benefit the financial position of the water utility, irrigation agency, etc.²⁸⁵

Pricing can also be a wise water policy mechanism for water allocation management.

Regarding bulk water removal, conflicts around economic interests can be intense because “the water privateers have now set their sights on the mass export of bulk water, by diversion and by super tanker”.²⁸⁶ One example of water economic conflict involves water exportations between Canada and the U.S.A. “In British Columbia, a number of export companies were lined up for business when the government banned the export of bulk water in 1993”.²⁸⁷ This kind of decision-making has large political and economic interests involved. Who has water jurisdictional management in such an international dispute? Should the decision be to

²⁸⁵UN. *Water Sector Policy Review and Strategy Formulation- a General Framework*. (Rome: UN FAO Land and Water Bulletin 3. 1995), at 19.

²⁸⁶*Supra* note 282. at 7.

²⁸⁷*Ibid.*, at 8 : “One project was to involve a Texas company prepared to pay for a fleet of twelve to sixteen of the world’s largest supertankers to operate around the clock. Under this one contract, the volume of water to be shipped to California was equivalent to the total annual water consumption of the city of Vancouver”.

divide jurisdictions and act cooperatively, or to expand the conflict into an inter-governmental, international dispute?²⁸⁸

One solution is that a water management system should research alternatives for sustainable uses of water resources, based on more than exclusively economic interests. For instance, as noted earlier, Canada and the U.S.A have planned to amend the Boundary Waters Treaty and to prohibit international BWR²⁸⁹ for environmental reasons. On the other hand, there still are issues about the possibility of international water export for exclusive trade reasons; for example, based on NAFTA dispositions.

2.1 Canada

In Canada, the major discussion about international water trade centers on the North America Free Trade Agreement (NAFTA). "From a Canadian perspective, one of the most controversial provisions of the Free

²⁸⁸Peter Gleick pointed out that some international security experts have ignored or belittled "the complex and real relationships between water and security.... In fact, there is a long and highly informative history of conflicts and tensions over water resources, the use of water systems as weapons during war, and the targeting of water systems during conflicts caused by other factors." *Water Conflict Chronology* (The World's Water: Water Conflict Chronology, 2000), at introduction, on line <<http://www.worldwater.org/conflictIntro.htm>> Gleick compiled a history of several water conflicts from 1503, which involved Florence and Pisa as warring states whose basis of conflict was military with violence, to 2000, which involved Namibia, Botswana, and Zambia that also had military goals but without violence. *ibid.*, the chronology, on line <<http://www.worldwater.org/conflict.htm>>. See also, Gleick, P. H. "Water and Conflict: Fresh Water Resources and International Security", *International Security* 18, Vol. 1, 1993, pp.79; "Water, War, and Peace in the Middle East", *Environment*, Vol. 36, No. 3, 1994, pp.6; "Water and Conflict," in *The World's Water 1998-1999* (Washington: Island Press, 1998). Marq de Villiers, *Water* (Toronto: Stoddart, 1999), Part III: The Politics of Water, 213-317, and Part IV: What is to be done?, 319-365; Ehor Boyanowsky, *supra* note 95.

²⁸⁹Moreover, this prohibition will occur if this assessment verifies potentially damages after an environmental impact study. Yet recall previous explanations about the distinction between small and large-scale export done by Gary Fritz and Scott, because "water exports" such as beverages, and electricity are not considered: Chapter One.

Trade Agreement related to the export of water.”²⁹⁰ There is a legal debate on the concept of water under NAFTA terms, which could be a topic of a whole thesis.²⁹¹ A basic issue is whether water in its natural state is a good and/or product. However, localizing BWR issues, this section only reports some legal opinions and literature related to this legal debate.²⁹²

Gary Fritz and Matthew J. McKinney point out that the key definition of NAFTA reads: waters, including natural or artificial mineral water and aerated water, not containing added sugar or other sweetening matter nor flavored; ice and snow.²⁹³ Thus, by this definition, water appears not to be a product, unless it is processed or manufactured.

In addition Jon R. Johnson explains that “the plain and simple fact is that the GATT, the CUFTA, and the NAFTA only impose obligations respecting trade in products. Since **water in a natural state is not a product**, it is not affected by any of these agreements.”²⁹⁴ According to his explanation, in each of these agreements goods of a party are domestic

²⁹⁰Gary Fritz and Matthew J. McKinney, *supra* note 279, at 77.

²⁹¹The focus of my thesis is on domestic laws, specifically in water allocation systems, and neither on International Law nor on trade.

²⁹²See all referred authors of this section and the following literature: A. L. C.Mestral, and D.M. Leith, eds., *Canadian water exports and free trade* (Ottawa, ON: Rawson Academy of Aquatic Science, 1989); Wendy Holm. *Water and free trade : The Mulroney government's agenda for Canada's most precious resource* (Toronto, ON: James Lorimer, 1988); Blackman, Susan and Owen Saunders, *Legal implications of water export.* (Calgary. AL: Institute for Resources Law. University of Calgary Press, 1990).

²⁹³Gary Fritz and Matthew J. McKinney, *supra* note 279, at 77.

²⁹⁴Jon R. Johnson, “Canadian Water and Free Trade”, *Continental Water Marketing*, edited by Terry L. Anderson (San Francisco: Pacific Research Institute for Public Policy, 1994), at 57. [emphasis added]. The following for : the General Agreement on Tariffs and Trade (GATT), the North American Free Trade Agreement (NAFTA), the Canada-United States Free Trade Agreement (CUFTA). See also, Jon R. Johnson. *The North*

products as understood in the GATT whose obligations apply to products.²⁹⁵ The GATT does not define product but “the Article 31 of the Vienna Convention on the Law of Treaties provides that a treaty shall be interpreted in good faith in accordance with the ordinary meaning of the terms of the treaty in their context and in light of the treaty’s object and purpose.”²⁹⁶

The ordinary meaning of product is something that is produced. Thus, water must to be gathered, stored, transported, graded, treated, bottled or otherwise package, and so on, for it to be a product. **A BWR project does things with water that transform its natural state.** First, such a project removes water from its original sources. Then, the removal of water can be done by man-made diversion. Water can be pipelined, stored, tanked or even bottled, according to the major purpose of the project. “Bottled water is clearly a product. Water in a pipeline or a tanker is as much a product as is oil in a pipeline or tanker.”²⁹⁷ Thus, water from a BWR project is a product that can be traded under NAFTA rules. David Johansen and Sophie Dufour share the opinion that water does not constitute a product under the GATT nor a good for the purpose of the

American Free Trade Agreement : a comprehensive guide, rev. ed., (Aurora, Ont.: Canada Law Book, 1994).

²⁹⁵ *Ibid.*

²⁹⁶ *Ibid.*

²⁹⁷ *Ibid.*

definition section in the FTA but only while it is **in a natural river, lake or in the ground.**²⁹⁸

Beth Chalecki also notes that water has already been treated as a good and commercialized.²⁹⁹ There is no doubt that water can be considered a product. The authorization of BWR projects in Canada would give NAFTA country-members the rights to access Canada waters.³⁰⁰

Trade in goods between the United States and Canada is governed by NAFTA, which defines a good as 'domestic products, as these are understood in the General Agreement on Tariffs and Trade (GATT, the predecessor regime to the WTO) or such goods as the Parties may agree....' Most commercial goods and natural resource commodities such as lumber or food clearly fall under this definition. However, whether fresh water *in situ* would be classified as a good under NAFTA, remains an unsettled question. Both NAFTA and GATT refer to the Harmonized Tariff, in which 'ordinary natural water of all kinds' are classified under tariff heading 22.01, implying that they can be, and already have been, traded as a good.³⁰¹

World Trade Organization also designates water as a product in the North American trades:

Water exports from Canada or the United States to other countries are not governed by NAFTA, but by the terms of the World Trade Organization (WTO), which are even more hostile to environmental concerns. While NAFTA makes

²⁹⁸Paraphrased David Johansen, Library of Parliament, *Water Export and the NAFTA* by David Johansen. (Ottawa: Law and Government Division, Parliamentary Research Branch, 1999) on line <<http://dsp-psd.pwgsc.gc.ca/dsp-psd/Pilot/LoPBdP/EB/prb995-e.htm>> at 7. Sophie Dufour, "The Legal Impact of the Canada-United States Free Trade Agreement on Canadian Water Exports," 34 *Les Cahiers de Droit* 750.

²⁹⁹Beth Chalecki, "Bulk Water Exports and Free Trade", *The Pacific Institute for Studies in Development, Environment, and Security* (Fall 2000) 12.

³⁰⁰The following authors also consider that water could be a good under the NAFTA, and its country-members could have rights to access Canada waters, Wendy Holm, *supra* note 348; Barry Appleton, *Navigating NAFTA : a concise user's guide to the North American Free Trade Agreement* (Scarborough, Ont.: Carswell, 1994).

³⁰¹Beth Chalecki, *supra* note 299, at 12.

some provision for protection of the environment, the WTO establishes a presumption that any trade restriction, even one designed to protect the environment is illegal. The burden of proof that such a restriction is necessary rests on the country imposing the restriction. Moreover, with the precedent established by the 1991 Tuna-Dolphin case and the 1998 Shrimp-Turtle case, it can be concluded that the WTO does not generally accept domestic environmental protection legislation as a valid basis for imposing trade restrictions.³⁰²

With this interpretation, the value of water would be exclusively economic with no regard for its environmental worth. Although the three NAFTA countries — Canada, the United States, and Mexico — issued a joint statement confirming that NAFTA creates no rights to the natural water resources between them, nothing obliges them to exploit water for commercial use or for it being exported in any form.³⁰³

“Whether Canada should export water — that is a political issue to be resolved by the policy makers and citizens of the country.”³⁰⁴ If Canada has a chance to participate in global market decisions such as in World Trade Organization (WTO) resolutions,³⁰⁵ Canada would have the power

³⁰²Beth Chalecki, *ibid.*, at 13.

³⁰³Paraphrased Jon R. Johnson, “Canadian Water and Free Trade”, *supra* note 294; and David Johansen, *Water Export and the NAFTA*, *supra* note 298, 11-12.

³⁰⁴Gary Fritz and Matthew J. McKinney, *supra* note 278, at 71.

³⁰⁵“The mission of the WTO is to create a prospering global economy, increasing the flow of goods and services around the world. But critics argue most of the planet’s population will not benefit from WTO actions and may, in fact, be harmed by them.” *Police Fire pepper spray at WTO protesters*, 30 November 1999, CNN.COM online <<http://www.cnn.com/US/9911/30/wto.02/>> There have been several manifestations against the WTO and international corporations’ global economy decisions. In the opening ceremony of the WTO meeting in Seattle, on 30 November, 1999, labor and environmental leaders marched through downtown: “we’re here, along with a lot of other organizations, to say that the World Trade Organization is essentially writing the rules for a new global economy that really don’t incorporate the concerns of workers, environmentalists (and) consumers.” *ibid.* Then, in 2000, “diverse groups reunited again in Washington, D.C., on Apr 16. their agenda are starting to merge. The AFL-CIO

to influence the decision of whether or not to establish international water trade. But water trade would not be a proper water policy mechanism for water scarcity problems, if it were based on agreements that do not generally accept domestic environmental protection legislation as a valid basis for imposing trade restrictions.³⁰⁶

2.2 Brazil

For water trading, the most significant international practice for Brazil is the South American Common Market (*Mercado Comum do Sul-MERCOSUL*), which involves Brazil, Argentina, Paraguay and Uruguay.

MERCOSUL was established through the Assuncion Treaty and the Ouro Preto Procedure for the economic integration of its country members.³⁰⁷ It is a recent agreement still in the process of implementation.

endorsed demands for reforming the World Bank and the International Monetary Fund (IMF),” by Aaron Bernstein, *Business Week* . News Analysis, 17 April, 2000. For this year, “in Quebec City, local activist have already spent months planning their activities to confront the Summit of Americas.” WTOWatch on line <<http://wtoaction.org/ftaa.phtml>>. From April 20-22, 2001, Quebec City will host the Summit of the Americas, which brings together all the so-called leaders of North, Central and South America, except Cuba. “The stated purpose of Summit meeting is to put the final touches on the Free Trade Area of the Americas agreement (FTAA) which aims to extend the North American Free Trade Agreement (NAFTA) to the entire hemisphere. The FTAA is supposed to be adopted no later than 2005. Like the WTO, IMF, WB, APEC and the rest of the insidious alphabet soup, the FTAA is another engine – in the form of a “free” trade accord - which drives capitalist globalization.” *ibid.*

³⁰⁶There also are general water trade difficulties such as institutional arrangements for equal access, and for efficient control and monitoring of water resources. see Chapter Five and Six.

³⁰⁷The Assuncion Treaty, 26 March 1991, signed and ratified by States Parties, enacted by the following laws: in Argentina, Law n° 23981, 4 September 1991; in Brazil, Legislative Decree n° 197, 25 September 1991 and Decree n° 350, 21 November, 1991 in Paraguay without available information; in Uruguay, Law n° 16196, 22 July 1991. For historical background, see Rubens Antonio Barbosa, Foreign Relationship Minister of Brazil, on <http://www.mrc.gov.br/sitemercosul/resenha/default.asp?Key=138#138>. To MERCOSUL legal doctrine, see: I- Maristela, Basso, *Mercosul: seus Efeitos Juridicos, Economicos e Politicos nos Estados-Membros* (Porto Alegre: Livraria do Advogado

The preamble of the Assuncion Treaty established that the integration of national markets has to be accomplished through efficient utilisation of available resources, the preservation of the environment, the improvement of physical interconnection, the coordination of macroeconomic policies, and the complementation of different sectors of the economies based on proceeding, flexibility, and equilibrium principles. Therefore, environmental protection is included as one of *MERCOSUL*'s goals. Country members have discussed a draft of an addendum to the Asuncion Treaty about the environment.

Regarding water resources, unlike *NAFTA*, there has been no debate on whether water in its natural state is a good and/or product under *MERCOSUL* terms. *MERCOSUL* only imposes obligations respecting trade in products but does not define the term. The treaty regulates trade under goods and their processes of production, such as rules regarding the "General Regime of Origin" in Annex II. Item b (i) of this Annex considers: "products" from a mine, plant and animal by way of hunting, fishing, and gathering. However, the treaty does not mention natural resources, such as water in its source state, as a product.

Furthermore, like Canada, Brazil signed the Vienna Convention. Therefore, as in the Canadian discussion about the concept of a product, the Vienna Convention could be applied regarding the Law of Treaties.

Editora. 1995), "A Estrutura Institucional Definitiva do Mercosul, *Revista de Estudos Juridicos*, V.27, nº69, 1994, p.53-61; 2-Paulo Barbosa Cassela, *Mercosul: Exigencias e*

That is, “a treaty shall be interpreted in good faith in accordance with the ordinary meaning of the terms of the treaty in their context and in light of the treaty’s object and purpose.”³⁰⁸ As a result, water in its natural state is not a product in the *MERCOSUL* context. Water has to pass by a process of transformation, such as bottling, to become a product. None of *MERCOSUL*’s states parties has an obligation to export water in its natural state to each other.

Furthermore, from the *monismo nacionalista* approach and Brazilian constitutional rules regarding international laws, even if *MERCOSUL* imposed the water trade, it could not guarantee environmental protection. This is because such regulations are not superior to constitutional rules, which establish that environmental protection is the duty of the government and the community, those who have to defend and preserve it for present and future generations, such as the “ecological handling of the species and ecosystems.”³⁰⁹ That means that the aquatic environment is one ecosystem that must be preserved. In case of a conflict of laws, Brazil’s constitution rules prevail. For exclusive international market purposes, BWR under *MERCOSUL* rules would not affect the environmental protection established by the constitution.

Use of a water market as a policy mechanism of re-allocation of water resources is debatable. In Brazilian areas of greatest water demand

Perspectiva (Sao Paulo: LRI Editora, 1996). However, the treaty seeks economic integration, but it also has social and political implications.

³⁰⁸Jon R. Johnson, «Canadian Water and Free Trade », *supra* note 294.

and need, such as the northeast, implementing a water market is more complex because of social, political and economic differences among the water users.³¹⁰ Perhaps in Canada the implementation of water market would be different because of its social, economic and political characteristics. Although there is relatively low public acceptance, a water market also involves negotiation costs and requires provincial water law reforms. The lack of all these requirements or their inappropriate establishment can compromise water market success. As for international water trade, there is room for its implementation through the *NAFTA* rules, albeit perhaps with doubtful consequences for Canada. In addition to water trade, Canada and Brazil have the ability to protect international water flow and consequently to reduce or mitigate water scarcity in their border areas; for example, in the *International Boundary Waters Treaty*³¹¹ and the *Plata River Basin Treaty*,³¹² respectively.

The fact that many major rivers and lakes or, more generally, freshwater drainage basins, in all parts of the world traverse national frontiers is a complicating reality with which riparian states have to live. The waters of an international drainage basin are a shared resource so that conditions for the shared use of the waters are essential. The process for the apportionment of access is complicated by the variety of uses, sometimes conflicting, which co-basin

³⁰⁹*Supra* note 150, Article 225, § 1^o, I.

³¹⁰Furthermore, Bromley notes "as regards the comparative advantage of one institutional choice over another, note that to bring resources under a regime of individualized private property in the developing countries will often conflict with prevailing socio-cultural values. Depending on the nature of the asset- and on the socio-cultural characteristics of its users- it may sometimes be more appropriate to restore a common property regime than to attempt to promote privatization", *supra* note 163, at 33. The discussion related to different water users and stakeholders is in Chapter Five.

³¹¹*Supra* note 216.

³¹²*Supra* note 273.

states may claim. Thus, navigation, hydroelectric power, human consumption, irrigation, and other uses may all have to be accommodated in an international regime.³¹³

In Canada, the federal and some provincial governments have already established moratoriums on BWR but this does not mean an unchangeable situation. Perhaps in the event of an extreme scarcity of water, Canadian international rivers and lakes will be shared.

Finally, and in opposition to the so-called the Harmon Doctrine,³¹⁴ principles on cooperative use and management of international rivers and lakes may be established to alleviate water scarcity problems. New approaches with shared use and responsibility are challenges to the needs of co-basin states. Canada, Brazil and other countries have been involved in drafting international documents, conventions and treaties regarding freshwater protection and management, such as the *Convention on the Protection and Use of Transboundary Watercourses and International Lakes*, established on 17 March 1992 in Helsinki. Its enforcement can be a major factor in water scarcity solutions. The legitimacy of international governance for water protection and management is a coming challenge,³¹⁵ but this perspective cannot be addressed further in this thesis.

³¹³Kindred, *supra* note 217, at 1032.

³¹⁴By which an upstream state claims unlimited territorial sovereignty over the river. See also Kindred, *supra* note 217, at 1032.

³¹⁵Sovereignty issues have been discussed in international environmental law such as "the perception that international environmental process is insufficiently democratic," and "the nature of the legitimacy for international institutions;" see Daniel Bodansky, "The Legitimacy of International Governance: a Coming Challenge for International Environmental Law?" *The American Journal of International Law*, Vol. 93, 596, 1999.

CHAPTER FOUR PROPERTY RIGHTS AND MANAGEMENT DUTIES IN BULK WATER REMOVAL

1. Property Regimes, Water Rights and Management

Knowledge of the institutional framework permits us to judge, “the results it produces in terms of allocative (sic) and use efficiency.”³¹⁶ To identify factors and conditions related to the concept of water rights such as rights and duties in controlling water resource transfers can give us a better understanding about water resource allocation and BWR. For instance, in an institutional framework with insufficiently defined water rights, weak enforcement and sanctioning mechanisms, perverse incentives from other sectors may create water conflicts and consequently an inefficient allocation and use.³¹⁷ Thus, property rights, administrative and environmental issues are discussed through analyses of water regimes.³¹⁸

The law, among other functions, has to establish what is defined and protected as property. However, concepts such as "property", "rights", and "property rights" are often both central and confused. Bromley said that "many economists will invariably regard *property* as a physical object

³¹⁶Karin E. Kemper, *supra* note 1, at 48.

³¹⁷Paraphrased. Karin E. Kemper, *supra* note 1, at 48

³¹⁸“To explain natural resources issues is to discuss property right regimes and policy systems”, according to Bromley, *supra* note 163, at X. He has pointed out that “environmental policy is about rights and duties, and about benefit streams that represent ‘property’ to various interest,” at 16. Karin Kemper has also pointed out this relationship between a property regime and environmental management: “Property rights thus influence the use and allocation of an asset. Property rights, or the lack thereof, have been thoroughly discussed in the literature about natural resources, principally in relation to common property; open access resources and exclusive property rights”, *supra* note 1. That is discussed above.

such as a dwelling, a piece of land, or some such possession, *rights* as something of interest to moral and political philosophers, and *property rights* as some vague but necessary condition for the 'efficient' operation of a market."³¹⁹ In fact, "property is sometimes referred to as a bundle of rights". In others words, "property is not a thing, but a right, or better, a collection of **rights** (over things) enforceable against **others**."³²⁰

Two important things are to be highlighted in the legal concept of property: "rights" and "others". It means that property will always involve "rights and duties" and "owners and third parties". All property law concerns rights, duties, and privileges over things. Regarding a natural resource property regime, the consideration of third parties is relevant to the accountability of economic, social and ecological costs and benefits, as pointed out in the previous chapters. For instance, the relationship between the "owner" of water rights and the "others" (stakeholders) is essential to the access, use and sustainability of water resources.³²¹ As Ziff says, the legal definition of property "tells us not only what may be owned but who among the citizenry can qualify to be an owner."³²² The "owner" can

³¹⁹*Ibid.*, at 1. Bromley points out the need to understand these concepts to comprehend the natural resources issues. at 1. Regarding the political philosophers, see the topic "Origins of Rights" where he explained the Kant, Locke and Hobbes perspectives of "property rights". *supra* 163, at 4.

³²⁰Bruce Ziff, *supra* note 148, at 2.

³²¹Bryan Randolph Bruns and Ruth S. Meinzen-Dick, "Negotiating Access and Rights: Disputes over Rights to an Irrigation Water Source in Nepal". *Negotiating Water Rights*. Edited by. International Food Policy Research Institute (New Delhi, India: Vistaar Publications, 2000). at 201.

³²²Ziff, *supra* note 148, at 2.

completely exclude the “others”, depending on the kind of property regime, and particularly in a private property regime.

Regarding the legal concept of property, “the law of property concerns rights over goods and land, including their extent, acquisition and transfer.”³²³ One of the most common divisions of the study of property law is between real and personal property.³²⁴ Land and its interests are broadly classified as real property. However, “one must learn what interests there are in land, and these are many and varied.”³²⁵

“Besides the land itself, arise questions of the rights to ownership in the air, under the soil, to the water running beside it and so on.”³²⁶ “In

³²³S. M. Waddams, *Introduction to the Study of Law*, 3rd Edition (Toronto: Carswell, 1987), at 81.

³²⁴*Ibid.*, “real property is (broadly speaking) land and interests in land” . and “personal property includes goods and intangible items of property, such as rights of action and interests I patents, copyrights and trademark.” See also, Bruce Ziff, *supra* note 148, at 73. Moreover, besides this basic division there are other sub-divisions and categories of property interests: for instance Ziff’s classification: 1-Real Property: a) Corporeal, and b) Incorporeal; 2-Personal Property: a) Chattels Personal (i- Chooses in Action, and ii- Chooses in Possession), and b) Chattels Real (Leases); and, 3-Unique Interests: a) Aboriginal Title, and b) Others. *ibid.*, at 76. Furthermore, Waddams notes that “the law of property is an essential background to the law of civil obligations. Thus, the laws of torts and contracts assume the existence of, and are in a sense dependent on a law of property.” *ibid.* Personal liability and obligation can come from the environmental constrains on land use. “depend on the nature of the business conducted on real property, the location of the property and the need for financing , the inquires may include review of government agency files, environmental reports and conducting environmental site assessments and compliance assessments”, J. Madeline Donahue, “Environmental Due Diligence: Issues in Today’s Real Estate Transactions”, *Watch out! What you don’t know can hurt you*, Institute of Continuing Legal Education, Canadian Bar Association-Ontario, Royal York Hotel, Toronto, Canada, on January 28, 1999, [unpublished], at 1.

³²⁵Frank Taylor and Irwin Davis, *Real Estate Law in British Columbia*, (Vancouver: Butterworths, 1978), Volume 1, at 24.

³²⁶*Ibid.*, at 24. They also stressed that “as ownership of land gives arise to certain rights, it also give rise to certain responsibilities”, and that environmental liability is clearly one example of accountability.

general land includes both the surface soil and everything affixed to it.”³²⁷

So, is or is not water an extension of the land where it flows? Which legal treatment does water receive? Who is the “legitimate” owner of water resources? Which rights does the owner have, if any, in water, and against whom? What duties do “others” have, relative to a water owner’s rights?

As stressed by Lucas,³²⁸ water “has never fitted comfortably into the traditional categories of property rights.” Furthermore, it is necessary to be aware of the existence of different types of property regimes, such as state (or public), private, common, and “open access,”³²⁹ if we are to understand water “property” aspects: rights, duties, and privileges, and relations among “owners”, “rights” and “third parties”. This is essential for understanding water issues related to water allocation and BWR, particularly when there are conflicting water rights, uses, demand and supply, and consequently scarcity problems. Therefore, state water ownership and its correlation with water allocation are a focus of this study

³²⁷ *Ibid.*, at 99.

³²⁸ Lucas, *supra* note 60, at 1. in addition his footnote 2 commented that: “In Robert Edgar Megarry & H.W.R. Wade, *The Law of Real Property*, 5th ed. (London: Stevens, 1984) at 65 and 843, water is treated as part of the anomalous category of ‘natural rights’, and also as one of the qualifications on the rights of the holder of a fee simple interest in land. According to Trelease, a water right is an ‘intangible usufruct: it cannot be seen or marked or fenced or otherwise taken into possession, and its existence, nature and extent must be expressed in terms of the acts that may be done in relation to the source and in relation to similar or different, but inconsistent, acts of other persons’. Frank J. Trelease, “Policies for Water Law: Property Rights, Economic Forces, and Public Regulation”, *Natural Resources Journal*, Vol. 5, N 1, 1965, at 26. The distinction between flowing water, and percolating surface and underground water, which was originally based on lack of knowledge about groundwater hydrology, has also caused difficulties to property regimes classification. Moreover, sometimes there is confusion between these different regimes, for instance common property and open access as explained in this chapter.

³²⁹ Actually, it is not a property regime because in fact it is “non-property”.

because the property law regimes adopted by Canada and Brazil for water complement the previous study of the constitutional regime.

1.1. The State Property Regime and its Rights and Duties

State property "refers to property in which the state possesses the power of exclusion." The property is "subject to state control and is burdened with public obligations."³³⁰ "The allocation of public goods should be predicated on an assessment of collective interest. That is the situation for Canadian waters as well as Brazilian waters, which are vested in the federal and provincial/state governments. In both countries water is a public good.

Furthermore, in a state property regime, "individuals have a (sic) *duty* to observe use/access rules determined by controlling/managing agency. Agencies have the (sic) *right* to determine use/access rules."³³¹

³³⁰ Ziff, *supra* note 148, at 7.

³³¹ Bromley, *supra* note 163, at 31. That is distinct from private and common property regimes. Private property refers to property which belongs to a person or a group in possession of every right or power by virtue of a title. "Private property is a relationship among human beings such that the so-called owner can exclude others from certain activities or permit others to engage in those activities and in either case secure the assistance of the law in carrying out [this] decision," Ziff, *supra* note 148, at 5. Theoretically, in this system, "owners" "have *right* to undertake socially acceptable uses, and have *duty* to refrain from socially unacceptable uses", and "others" "have *duty* to refrain from preventing socially acceptable uses will occur." Bromley, *supra* note 163, at 31. Common property "is often used to refer to interests in which there is a shared power of use in all, but not a corresponding ability to exclude," Ziff, *supra* note 148, at 7. Ziff has noted that: "indeed, common property in its purest form is the right not to be excluded. Whether something is common property or is seen simply as the property of no one may be inconsequential. The air we breathe may be thought of as the common property of all, but it is equally sensible to think of it as the antithesis of property," *ibid.*, at 7, here he footnoted as origin note 36: "*Colls v. Home & Colonial Stores Ltd.*, [1904] A.C.179, [1904-07] All E.R.Rep. 5 (H.L.) at 182-3 A.C. (*per* Lord Halbury L.C.) speaking of light and air. Light, air and water "unavoidably remain in common" : Blackstone, *supra*, note 19, vol.2, at 14. "'Common property' means no property": Harris, *supra*, note 27, at 110. The concept of "common" property has been discussed. "can something really be common and property? There is an inevitable tension involved

Therefore, governmental agencies have management and control of water resources. When water is a public property, its domain, use and availability are vested in the state.³³² In fact, the state has all water property rights,

in definitions of common property." Tony Beck, "Lost Property: User Groups in Theory and Practice", *The Cooperative Management of Water Resources in South Asia*. Edited by Tony Beck, Pablo Bosc, Barric Morrison. Centre for India and South Asia Research, Institute of Asian Research (Vancouver, BC, Canada: University of British Columbia, 1999), at 14. Common property has been confused with the open-access regime or non-property. Dudley, *supra* note 391, at 765. "A recurring theme in this literature on common property is that mainstream 'property rights economists' have made a fundamental error by confusing common property with open access." *ibid.*, in the footnote 51. Bromley, *supra* note 163, at 22, he has stressed that the allegory of "tragedy of the commons" by Garren Hardin's writing has contribute for this confusion. Moreover, "by confusing an open access regime (a free-for-all) with a common property regime (in which group size and behavioral rules are specified) the metaphor denies the very possibility for resource users to act together and institute checks and balances, rules and sanctions, for their own interaction within a given environment". When, actually, open access is the regime "in which there is no property (*res nullius*).", Bromley, *supra* note 163, at 30. Moreover, in this regime a resource "will belong to the party to first exercise control over it" that "everybody's property is nobody's property." *ibid.* Therefore, there are different regimes with distinct characteristics: in the common property regime: the management group (the 'owners') has *right* to exclude nonmembers, and nonmembers have *duty* to abide by exclusion. Individual members of the management group (the 'co-owners') have both *rights* and *duties* with respect to use rates and maintenance of the thing owned, and in the open access regime: no defined group of users or 'owners' and benefit stream is available to anyone. Individuals have both *privilege* and *no right* with respect to use rates and maintenance of the asset. The asset is an 'open access resource', *ibid.*, at 31. For the common property literature related to natural resources see Norma J. Dudley, "Water Allocation by Markets, Common Property and Capacity Sharing: Companions or Competitors", *Natural Resources Journal*, (Albuquerque: the University of New Mexico School of Law, 1992), Volume 32, at 764. This author indicated that "a large body of literature has arisen on the desirability of common property instead of private or state property in natural resource management. The economic discussion is led by writing which would fit Allan J. Randall's institutional/land economics (I/LE) classification. Conception Cruz; Christopher Gibbs and Daniel W. Bromley; and John Quiggin provide further examples of such writings. Other prominent contributors in the wider literature are anthropologists and human ecologists as well as geographers, and political and environmental scientists." The common property regime for natural resources is one of the bases for International Environmental Protection. As suggested Dudley, "the literature can be divided broadly into concerns with international, global commons and concerns with local, regional and national commons."

³³²Percy and Lucas note that "the formula, which vests the right to use water in the Crown" in Canadian Water Systems is adopted from the *Irrigation Act, 1886* [Victoria, Australia], basically for answering the needs of gold miners, respectively *supra* note 4. *The Framework of Water Rights Legislation in Canada*, at 8, and *supra* note 60, at 13.

such as possession, management, control, income, and transfer.³³³ The state decides in which ways and conditions these rights will be granted to individuals; for instance, by a permit, by a licence, by a concession, by authorisation, or by any other administrative "concession". The major legal discussion about these administrative "concessions" and water rights focuses on their nature: are they in contract, property or mere regulatory permission?³³⁴ Their legal nature affects their security as rights. Does their security contribute or not to water allocation and water scarcity problems? This discussion involves not only the security of holders' rights but also the protection of environmental and third parties against water damages.³³⁵ Usually, newcomers and third parties are denied in most natural resource rights systems.

Some judicial decisions have suggested that certain features are essential. So, it has been said that a right cannot subsist as property unless it is 'definable, identifiable by third parties, capable in its nature of assumption by third parties and [has] some degree of permanence or stability.' Under another version, to count as property a right must be binding on third parties and capable of being assigned. Although such approaches may find adherents, they are neither invariably accepted nor universally true.³³⁶

³³³Regarding the types of property rights: for instance, Ziff lists the following rights: "1-possession, management and control; 2-income and capital; 3-transfer *inter vivos* and on death; and protection under law (from such things as expropriation)," *supra* note 148, at 2-3.

³³⁴See Chapter 7 items 1.2 and item 2.2. the nature of the licence, respectively in Manitoba and Ceara Systems. See also Lucas. *supra* note 60.

³³⁵Cruz points out that, unfortunately, "in the grant of concessions to use public waters, the principle of beneficial use has not been referred to" and "the concern is to protect holders rights instead of environmental and third parties", *supra* note 13, at 15. Manitoba and Ceara systems are studied next chapter, the nature of water licence, water rights transferability, cancellation and suspension are some of the issues discussed.

The importance of third parties in water resource development relates to transaction costs that can result from projects such as BWR, as noted in Chapters 1 and 2. What if BWR is allowed and from it results economic, social and ecological harmful impacts: for instance, pollution results from a project's construct in a basis of origin? How should the community, which does not hold a licence and consequently have a right to water use but still depends on this water resource, be compensated? On a third party's effects, transaction costs and other interdependence issues should be considered in water resource management while resources are allocated. The allocation can interfere with the water resources in question in different ways. Does it only "irritate" other parties who do not have rights to water use? Does it pose a danger to human health? Does it threaten ecological integrity? Does it an irreversibly affect the availability of water? How should water legislation regulate the interdependence of third parties in water allocation? Thus, if the state owns all waters and their control, and allocates them improperly affecting the environmental and public interests, does it have to compensate the community for its bad administration?³³⁷

³³⁶Bromley, *supra* note 163, at 5.

³³⁷Regarding natural resource management and the consideration of third parties. Bromley points out that: "related to the importance of third parties is the level of transaction costs necessary to resolve the interdependence. And it would even be useful to consider distinctions among various categories of transaction costs, with the usual breakdown being information costs, contracting costs, and policing costs." *ibid.*, at 53.

"The property rights concept is much richer than has traditionally been recognized."³³⁸ It requires a better understanding of its attributes. This knowledge may make it easier to identify the appropriate policy mechanisms for dealing with water allocation and take into account protection of the environment and of third parties against potential BWR's damages.

1.2. The State Property Regime and its Contrasts with Other Regimes

All property regimes have been criticised when they are compared and contrasted among themselves. Private property regimes are often contrasted with the notions of state and common property. This is because "the promotion of economic efficiency is commonly advanced as a justification for private property."³³⁹

Advocates of individual property rights start from the assumption that the best mechanism to achieve efficient allocation of water is the market, and one of the fundamental preconditions for a market to function is a well-defined property right. Secure property rights provide the holders of such with a guarantee that they will receive a certain volume of water.³⁴⁰

In fact, the security of holders' rights does not guarantee the availability of water if the integrity of water resources is not also secured and protected. Can the market itself define property rights and also grant water protection?

³³⁸*Ibid.*, at 51.

³³⁹Ziff, *supra* note 148, at 11. See also, Bromley *supra* note 163, at 12 and the section 'the policy problem; ideology, efficiency, and objective truth rules', 204-231.

Defenders of the water market “focus on markets as the only efficient solution, their approach precludes the analysis of alternative institutional arrangements for the management of water resources,”³⁴¹ as a state property. Natural resource free markets also require and depend on institutional arrangements, which are sometimes denied by its defenders. They forget or do not recognise that water markets are distinct from other natural resource commodity markets for different reasons. For instance, traditionally public water held by private entities are subsidised, water has to support collective public values but communities have not participated in the decision making process.³⁴² However, they are parties who often suffer water distribution impacts.

But not only economic efficiency defines a property regime. As Carl J. Bauer points out “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.”³⁴³ As explained in the previous section, the property rights concept is complex and requires considerations of third party interests involving the limitation of, and disputes for, water resources. For instance, how could the market itself

³⁴⁰Karin E. Kemper, *supra* note 1, at 35. She points out that “In the water literature, one of the keenest advocates of the introduction of individual property rights, *i.e.* ownership rights, has been Anderson.”

³⁴¹*Ibid.*, 35-36.

³⁴²Paraphrased Ronald A. Kaiser, and Laura M. Phillips, “Dividing the Waters: Water Marketing as a Conflict Resolution Strategy in the Edwards Aquifer Regions”, *Natural Resources Journal*, Vol. 38, 1998, at 429

solve conflicts resulting from a BWR project if they occur between related importer and exporter regions?

Therefore, those who criticise a state property regime argue about its “efficiency” and “prosperity”. However “the driver for prosperity is not the only concern to which the law, including the law of property, should respond.”³⁴⁴ In fact, in any market economy it is necessary that “some public and common holdings” keep free enterprise on track.³⁴⁵ Nevertheless, some people see the regime of common property as over-exploitation.³⁴⁶ The famous case known as “the tragedy of the commons”³⁴⁷ is an example of the confusion between common and open access noted before. However, this work has promoted the efficiency of private rights. Bromley points out that “the economic case for individual ownership is sometimes made by reference to a parable known as the

³⁴³“Slippery Property Rights Multiple Water Uses and the Neoliberal Model in Chile, 1981-1995.” *Natural Resources Journal*, Vol. 38, 1998, at 109.

³⁴⁴Ziff, *supra* note 148, at 17.

³⁴⁵*Ibid.*, at 17.

³⁴⁶For instance, “with common property forests, rangelands, and fisheries, some natural resource degradation arises from population growth within the relevant social unit having rights to the resource. The entailed increase in the use of the given natural resource, though exceeding the ability of the renewable resource to sustain its annual yield, cannot be stopped because of the nominal right of every villager to take what he/she needs to survive. As a village grows, and therefore as the number of rights holders grows apace, the total demands on the physical environment and its resources will ultimately exceed the rate of natural regeneration”, Bromley, *supra* note 163, at 32. In fact the problem it is not the property regime but the management of the size of population.

³⁴⁷G. Hardin, *The Tragedy of the Commons*, reproduced in B. Ackerman, ed., *Economic Foundations of Property Law* (Little, Brown & Co., 1975).

tragedy of the commons."³⁴⁸ Yet, he also maintains that there are different credible positions regarding this case.³⁴⁹

The traditional legal and economic view is that private property brings freedom. However, this freedom can also mean abuse and restriction of democratic values: "while private wealth can serve as a counterbalance against government, democratic values may nevertheless be diminished if property is not distributed evenly."³⁵⁰ The concentration of rights in a few hands also creates centralisation of power. Furthermore, the private interest can lobby governmental practice, in exchanging votes for financial supports. As known nowadays, powerful corporations can play decisive roles in a society; sometimes and in some places they are stronger than any government. That means that private owners can also centralise power and limit other people's rights, just as a government can. Actually, they can be more powerful than government because they can accumulate both political and economic powers. What will happen if a BWR project is licensed for

³⁴⁸Bromley, *supra* note 163, at 11.

³⁴⁹*Ibid.* Ziff also comments the Tragedy of the Commons and showed different commentaries and literatures: "the Tragedy of the Commons' provides a powerful argument for the assignment of property rights', J.L. Harrison, *Law and Economics* (West Pub. Co., 1995), at 43. Michael Taylor does not share this enthusiasm. He claims that 'in almost every detail Hardin goes wrong' : M. Taylor, 'The Economics and Politics of Property Rights and Common Pool Resources'. 32 *Nat. Resources J.* 633 (1992) . at 634;" " See A. Carter, *The Philosophical Foundations of Property Rights* (1989)at 68; where it is offered that "it is the private ownership of the cows which actually causes the problem". Four responses to the tragedy are canvassed in M.J. Trebilcock. "Economic Analysis of Law" in R. F. Devlin, ed., *Canadian Perspectives on Legal Theory* (Edmond Montgomery, 1991), 103, at 114-5. See Elenor Ostrom's account of the factors that can lead to the successful management of common pool resources in E.Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge) Univ. Pr. , 1990). See also C. M. Rose, "Give-ness and Gift: Property and the Quest for Environment Ethics" ,24 *J. Environ. L.* 1 (1994)," *supra* note 148, at 12-13.

private purposes, such as bottling water facilities for international markets in a place where conditions change because of unpredictable effects of the climate changes, or where water resources diminish in semi-arid areas when the availability of water resources can be seasonal and irregular? In a prior allocation system, this dispute for water in a limited situation will be solved granting water for the senior user.³⁵¹ The solution for this conflict of water depends on the bases of the allocation system involved. Perhaps the BWR licensee could or could not have compensation for losing the right to use water, if its seniority would not grant water supplies. This varies according to the system in which this license is obtained and the terms and conditions established.

“Where it is persuasively argued that the question of whether or not a resource should be treated as private property (and therefore not held in common) depends of whether it should be thought of as ‘**excludable**’, from practical, legal and moral points of view.”³⁵² Even so, regarding the “freedom of owners,” the state can establish, limit, and broaden their property rights. Furthermore, the state could abolish these private property rights if they were not granted as a constitutional guarantee. For instance, in the Brazilian legal system, private property is a constitutional guarantee. Actually, “property is merely the agency used by the state to allow the enjoyment of negative freedom. For those who value freedom from

³⁵⁰Ziff, *supra* note 148, at 21.

³⁵¹This approach is commented in Chapter Five.

³⁵²K.J. Gray, “Property in Thin Air”, [1991] C.L.J. 252 [emphasis added].

governmental interference (and liberals and libertarians certainly do) property is an ideal concept to adopt."³⁵³ What is needed is rejection of the concept of property, as thing-ownership in favour of the idea of property as a bundle of rights and duties, which can be protected as property but also have to be controlled.³⁵⁴

Certainly, all property regimes have restrictions and limitations established by the state through rules and policies. But questions remain, such as: which property regime and regulatory system should be adopted for water resources? Which is the best regime? Private? Common? State?

Each of these regimes has distinct effects and implications for water management regarding rights and duties. In fact, the major issue is not the type of property regime but the kind of control each property regime exerts, because "any property regime, whether private, common, or state – is an authority system. In the absence of consistent and coherent institutional arrangements, resource use is reduced to first come, first served."³⁵⁵ This approach constitutes rights to specific quantities of water to those who first put water in use. That is, "first come, first in rights". The "first come, first served" constitutes the basis for the principle of prior allocation that is historically rooted in Western Canada's water allocation system, including Manitoba. For instance, on the prairie "once a licence is issued, the water user enjoys an unusual degree of security. The quantity of

³⁵³Ziff, *supra* note 148, at 21.

³⁵⁴Paraphrasing Ziff, *ibid.*, at 39. For instance the formula to vest all water rights in the Crown/State is a form of control.

water to which the application is entitled can be reduced in times of shortage by the application of the principle of prior allocation, under which water is distributed according to the seniority of the licence holder.”³⁵⁶

However, any kind of control by the property regime should focus on a functional approach which takes into account “how property, as a tool of social life, should be used.”³⁵⁷ “This approach recognizes that property is inseparably tied to social values.”³⁵⁸ For instance, the Brazilian Constitution foresees the social function of property, which could promote the defense of public interest in natural resource management. Regarding water, “it would be useful if a policy could differ among rights, access, and acquisition of water”³⁵⁹ and recognise them for achieving social functions. Who is the legitimate user? Only the person with water rights granted by license? What about the others who will not have an opportunity to receive water rights, because the permit system does not have any mechanism for transferring, reallocating, granting water resources and rights to new users?

Thus, where the state owns the water resources, the water rights should be allocated in a manner that grants a designated number of users to have equal rights and access of water. That is, the state should practice the theory by which “property law serves not only as a means of determining

³⁵⁵Bromley, *supra* note 163, at 10.

³⁵⁶Percy, “The Institutional Creation of Water Shortages on the Canadians Plains” . *supra* note 4, at 454.

³⁵⁷Ziff, *supra* note 148, at 39.

³⁵⁸*Ibid.*

the objects of ownership, it also allocates entitlements and provides a context in which those initial rights can be exchanged."³⁶⁰ In case of state water rights, not all rights should be allocated based only on economic efficiency, but could also be used to accomplish public initiatives.³⁶¹ To understand that property rules and the management of natural resources can be affected by "a wide spectrum of social goals"³⁶² is a challenge for all governments achieves water resources sustainability.

Property regimes effect and affect an environmental policy regime. Rights, duties and benefits that represent a property regime vary and consequently cannot avoid being considered in a natural resource policy. A water policy relates to the definition of water rights; for instance, water in private or state ownership requires appropriate policies for granting water uses without exploitation but with protection for future generations. Thus, the major consideration in this relationship between property regime and natural resource policy is not only regarding the kind of regime but also, and especially, the kind of control this regime requires. Moreover, institutional arrangements can indicate, even determine, how efficient a water policy can be. For instance, its mechanisms provide guidance for enforcement and control over water rules. Weak enforcement usually results from inappropriate institutional arrangements and policy tools. No enforcement becomes a policy of its own.

³⁵⁹ Bryan Randolph Bruns and Ruth S. Meinen-Dick, *supra* note 321.

³⁶⁰ Ziff, *supra* note 148, at 43.

³⁶¹ *Ibid.*, at 45

Both Canada and Brazil have state ownership of water but this remains independent of their property regimes. Their water property regimes still allow them to establish institutional arrangements with flexibility in allocating water rights, as well as strong enforcement of controlling water rules. Each can grant a number of users with equal rights and access to water, and each has mechanisms for solving water conflicts or compensating third parties when they are excluded from water access. Such a system is appropriate to assess more diligently the scarcity of water, the real need for water transfers, and BWR projects; and it can certainly forbid what is harmful or monitor what is acceptable and extremely needed. Thus, the next chapter studies the Manitoba and Ceara water laws and policies for the allocation of water and analyses its implications for scarcity and BWR.

³⁶²Paraphrased, *ibid.*

CHAPTER FIVE WATER ALLOCATION SYSTEMS, WATER SCARCITY AND BWR IN MANITOBA AND CEARA JURISDICTIONS

This thesis verified the consistency and coherence of the Manitoba and Ceara institutional arrangements regarding water allocation and BWR. Water laws and policies are discussed through analysis of Manitoba and Ceara water regimes and their alternatives, for reallocation, conservation, water transfer, and other mechanisms that address water scarcity problems. This chapter discusses water administration and environmental issues, and identifies factors and conditions related to water resource allocation and BWR, such as user rights, water resources information, flexibility, and pricing information. In this context, Manitoba's BWR legal moratorium is also analysed regarding its efficiency for water allocation and its impacts on water scarcity.

Like other natural resources, water has to be protected and controlled, to prevent unauthorised exploitation. A system of permission is essential regarding allocations and demands for current and future users. However, water allocation and protection are not always as efficient as they could be. The lack of efficiency has been blamed on the institutional arrangements³⁶³ that support these systems. Kemper explains the rules of institutional arrangements in her analysis of water resource allocation and use in the Curu Valley in Ceara,³⁶⁴ which include informal and formal arrangements. T. O' Oriordan and Rosemary J. point out institutional

effects on water resource allocation, showing that such decisions are often affected by powers of governmental agencies and by pre-existing social and legal institutional arrangements.³⁶⁵ Focusing on the analysis of formal institutional arrangements, Cruz presents a similar perspective of the Philippines water system in her analysis.³⁶⁶ Percy focuses on the formal institutional arrangements in the legal framework of Canadian water systems.³⁶⁷ Similarly, this thesis focuses on formal institutional arrangements of the Manitoba and Ceara water allocation systems for analyzing their efficiency. Thus, this investigation of the Manitoba and Ceara statutory water laws³⁶⁸ focuses on water allocation because of its relationship to the quantitative aspect of bulk water removal. Two major questions address how the Manitoba and Ceara formal institutional arrangements are organized and operated: 1) how does the process through

³⁶⁵As explained in Introduction, see *supra* note 3.

³⁶⁴Kemper, *supra* note 1.

³⁶⁵T. O' Oriordan and Rosemary J., "Choice in Water Use". *Water Earth, and Man: a Synthesis of Hydrology, Geomorphology and Socio-Economic Geography*, edit. Richard J. Chorley (London: Methuen, 1969), at 563. Furthermore, water allocation system varies place to place, time to time: "water-resources policy, therefore, will not only vary significantly from nation to nation but even between regions because of the differing political, social, economic, and psychological stresses that are placed upon decision-makers," at 563.

³⁶⁶Cruz, *supra* note 13.

³⁶⁷Percy, *supra* note 4.

³⁶⁸In the Canadian legal system, there are two types of laws: common law and statutory law. "Common Law is the term used to denote the rules established in English speaking countries based on decisions that have been passed down through history by the courts. As such, many of the components (or rules) of common law remain unwritten, or are recorded in the form of judgments of courts in systems based on English law. Most of Canada – excepting Quebec- inherited the common law system from Great Britain", in Harriet Rueggeberg & Andrew R. Thompson, *Water Law and Policy Issues in Canada* (Vancouver: Westwater Research Centre, the University of British Columbia, 1984). Such statutory law usually regulates water quantity, water quality and indirect uses such as fishing and recreational access. Some of constitutional

which water resources are allocated ensure the best use of water in an efficient and effective manner? and, 2) how does the process of water allocation guarantee equitable distribution among users of the water resource?³⁶⁹

PART 1- MANITOBA: THE WATER ALLOCATION SYSTEM

1.1. Prior Allocation and Other Old Issues in the Manitoba Water System

The current Manitoba Water Rights Act of 1988 still maintains the basic western model,³⁷⁰ based on prior allocation, which co-exists with riparian rights in a licensing system. Major criticisms to Manitoba water system are, among others that: 1) the prior allocation approach promotes waste of water instead of water conservation, and does not take into account public interest concerns,³⁷¹ 2) water rights are still linked to the

rules considered in Chapter Two are recalled in this analysis because they are also parts of the BWR's formal institutional arrangements.

³⁶⁹Paraphrasing Cruz, *supra* note 13, at 38. She elaborated similar questions, checking the implementation of the Philippine Water Code.

³⁷⁰There were no changes from Irrigation Act framework. "Nevertheless, despite the extensive changes in substance and form, it still retains all the essential features of the basic western model." Percy, *supra* note 4, *The Framework of Water Rights Legislation in Canada*, at 35. Moreover, "although divergences from this basic model of water law naturally occurred over the years, it was not subject to any fundamental re-examination until the Saskatchewan Water Corporation Act was passed in 1984. Most water rights on the prairies were thus granted under the basic legal model and it remains influential today, even in Saskatchewan." Percy, *supra* note 4, "The Institutional Creation of Water Shortages on the Canadian Plains," at 453. Although David Percy basically analysed the previous Manitoba Water Act, *Water Right Act*, R.S.M. 1970 c. W-80, and its related amendments such as *Water Rights Act*, S.M. 1982-83-84, c. 25, Cap. W-80, his conclusion remains applicable to the current Manitoba Water Rights Act of 1988. Manitoba current Act proclaimed in 1988 was preceded by three earlier acts passed in 1930, 1954 and 1972, and each of these acts succeeded some amendments.

³⁷¹Percy, *ibid.*, "Water Rights in Alberta", at 148.

land with limited mechanisms for transferring water rights;³⁷² and, 3) this system creates shortages among the users and makes water transfers inevitable.³⁷³

This thesis sustains these arguments to the current Manitoba water framework, verifying the Manitoba *Water Rights Act*,³⁷⁴ *Water Resources Conservation and Protection and Consequential Act*,³⁷⁵ *Applying Manitoba's Water Policies*,³⁷⁶ and *Water Use & Allocation*.³⁷⁷

First, the present legislation still privileges the prior allocation approach when it establishes that “licences have precedence in relation to one another according to the date of submission of the application for each licence.”³⁷⁸ Once a licence has been issued its precedence confers to the licensee rights to use water from a source without interference relative to other junior licensed users of water from that same source.³⁷⁹ There are so-called seniority rights. Manitobans have required the extinction of the prior

³⁷²Lucas, *supra* note 60, at 34, and Percy, *ibid.*, *The Framework of Water Rights Legislation in Canada*, at 23. and “Water Rights in Alberta,” at 150; “The Institutional Creation of Water Shortages on Canadians Plains,” at 454.

³⁷³Percy, *ibid.*, “Water Rights Law and Water Shortages in Western Canada” and “The Institutional Creation of Water Shortages on Canadians Plains.”

³⁷⁴*Supra* note 19.

³⁷⁵*Ibid.*

³⁷⁶Manitoba Environment, *Applying Manitoba's Water Policies* (Manitoba Environment: Water Policy, on line <http://www.gov.mb.ca/natres/watres/mb_water_policies.pdf >last update: March 17, 1997).

³⁷⁷*Water Use & Allocation*, *supra* note 9.

³⁷⁸“Precedence of licences”. Section 8 (1) of Water Rights Act, *supra* note 19. This act also establishes “precedence of renewed licences”, Section 8 (6): “A licence that is renewed in accordance with the regulations retains its original precedence.”

³⁷⁹*Water Use & Allocation*, *supra* note 9, at 54.

allocation,³⁸⁰ especially because seniority rights can exclude new water users. In fact, new users have applied for water rights but there are not enough water resources for everybody. Thus, senior holders keep their rights to use available water resources while new users have to wait for their opportunities. As a result, the Manitoba water licensing system has a considerable backlog of applications.³⁸¹ “Currently there are approximately 850 valid licences, 850 expired licences, and 800 applicants requiring attention.”³⁸² This licensing backlog and lack of enforcement have led to suggestions that response deadlines in the Act or Regulations for answering new water users applications for water rights be included and strictly enforced.³⁸³ Besides this legal change, an institutional arrangement was required that addressed the backlog of applications for water rights licences: “the use of additional resources over a three or four year period; support from other agencies, along with administrative and policy changes as required to clarify and streamline the licensing process.”³⁸⁴

Second, the *Water Rights Act* does not prohibit the transfer of water rights, but the legal problem of transfer and its restriction can be implied. In practice, the legislation has not been interpreted to allow the

³⁸⁰As a fundamental change to the Act: “First in time first in right,” *Water Use & Allocation*, *ibid.*, at V.

³⁸¹Manitobans have also pointed out that the “first priority is to clean up the backlog of applications”, *ibid.*, at I.

³⁸²*Ibid.*, at I. These data are for 1999; however Ray Bodnaruk, Manager of Licensing Water of Manitoba Conservation pointed out that these data are basically still the same because while they clean up the backlog of applications, they receive around 200 new ones: personal interview on 16 May 2001 at Manitoba Conservation, Water Resources Branch, 200 Saulteaux Crescent, Winnipeg, MB.

³⁸³*Ibid.*

transfer of water rights separately from land.³⁸⁵ Even though Manitoba water law does not have a provision that establishes water rights appurtenant to the land, its Section 11 establishes that: where an estate or interest in land is transferred, any subsisting licence relating to the estate or interest expires automatically as of the date of the domain transfer, unless the minister, upon the application of the transfers the licence to the transferee.³⁸⁶

The termination of licence with the domain transfer implies that water rights are still linked to the land. This also appears to be a limitation to transferences of water rights since a licence and its holder rights cannot be transferred. Thus, Manitoba's water allocation system is still linked to the land and is limited in terms of transferring water rights. Yet the problems related to Manitoba mechanisms for transferring water rights have been the same: 1) the impossibility of transfer from a higher to a lower purpose of water uses; and 2) limited situations that permit cancellations of licences. In Manitoba, the possible re-allocation of water rights identified in a licence can basically occur through the following legal mechanisms: 1) cancellation for a higher priority use (s.14 (1), s.14 (5)); 2)

³⁸⁴*Ibid.*, at 2.

³⁸⁵That means that water resources are appurtenant to the land where they are. Explanation regarding other legislation that makes water rights appurtenant to land or undertaking. see Lucas, *supra* note 60, at 33-35.

³⁸⁶*Manitoba Water Rights*, S. 11, *supra* note 19.

suspension and cancellation for “public interest” (s. 19(1) (b)); or, 3) amending or cancellation for non-use of licence (S. 15).³⁸⁷

According to the Manitoba *Water Rights Act*, a licence can be cancelled for a higher priority use where all the water available has already been allocated.³⁸⁸ These cancellations require notice and a formal hearing before any decision.³⁸⁹ However, for this cancellation there is compensation payable by the new user according to sections 14(2) and 14(5). That means extra costs for the new users if they want available water. Moreover, this hypothesis of cancellation seems like an incentive to water conservation or for better use, but it depends on which kind of use is in question. For instance, if the higher priority use is as much of a consumptive use as the lower one, in practice there will be no difference in water conservation results. Agricultural and industrial uses are both consumptive water uses that can cause the same effects in the water supply but they are in a different level of priority. The supposition of cancellation does not appear to contribute that much to water conservation.

³⁸⁷ *Ibid.*

³⁸⁸ *Ibid.*, Cancellation of licence 14(1) Where a person applies to the minister for a licence to use or divert water at any place or point and minister all the water available for use or diversion at that place or point has already been allocated to other licensees if the purpose for which the applicant will use the water is higher in priority in the order of priority established therefore under section 9 than that of the purpose of one licence or more of those other licensees, the minister may issue the licence to the applicant and, subject to section 19 may cancel or restrict the rights under the licence of any one or more of those other licensees ranking lower than the applicant in priority of purpose.

³⁸⁹ *Ibid.* Notice and hearing before cancellation 19(2) A licence or permit shall not be cancelled under subsection (1) or any other provision of this Act until after notice and a hearing in accordance with disposition subsections (3), (4) and (5).

Also, a licence can be cancelled “where in the opinion of the minister it is in the public interest to do so.”³⁹⁰ There is no compensation on behalf of public interest, even though it is a discretionary transference. In other words, this exercise of establishing a transfer without guidelines can induce a broad discretion and risk of abuse. On the other hand, a similar inability to establish the public good character of water also occurs with market mechanisms of water transfers. The market cannot define and measure public interests; these include the aesthetic value of a river basin, and so on.

Yet, a licence can also be cancelled in cases of “non-use” where a licensee fails to use according to the purposes authorised or to the extent authorised by the licence, or for a continuous period of one year or more.³⁹¹ Cancellation based on “non-use” can be an incentive either to water conservation or to water waste. On the one side, if the licensee is using water for different purposes or in excess, the “non-use” or “no appropriate use” may be seen as an incentive for conservation, besides being a wise enforcement mechanism for licencing purposes. On another side, if the licensee has not used water for one year or more, the “non-use” clause seems to be an incentive to waste the water only for keeping a

³⁹⁰*Ibid.* Suspension and cancellation of licence 19(1) In addition to any suspension or cancellation of a licence that may be authorised under any other provision of this Act, the minister or a person authorised by him in writing may, for cause, (a) suspend a licence or permit for any stated period of time or until a condition is met; (b) where in the opinion of the minister it is in the public interest to do so, cancel a licence or permit whether or not it has first been suspended under clause (a).

³⁹¹Manitoba *Water Rights Act*, *supra* note 19. Section 15.

licence. There is no incentive to not use or voluntarily transfer the available water or water rights when the legitimate user does not need water.

However, with or without its defects, in practice, the “non-use” clause for cancelling a water licence has been the most used mechanism for re-allocated water rights in the Manitoba system, according to Ray Bodnaruk, Water Licensing Manager of Manitoba Conservation.³⁹² This means that, in practice, at least a cancellation based the on “non-use” clause through policy implementation can reduce potential shortages among users. That opposes in part the criticisms that have been made against cancellations of licences in Manitoba. Such cancellations are the limited legal method that makes “water shortages inevitable.”³⁹³ On the other hand, this practical advantage is not enough to change all other limits in the prior allocation approach. Furthermore, Manitobans still want freed up “unused allocations.”³⁹⁴

Finally, if the Manitoba water framework is basically established on the prior allocation approach, and still presents these same old problems without significant changes, then this system cannot ensure efficient and effective water allocation, nor guarantee equitable distribution among users of the water source, nor avoid a shortage of water for new users.

This thesis also argues that both the legal framework and policy can contribute to scarcity and the need for water transfers because of the

³⁹²In personal interview, on 16 May 2001.

³⁹³Percy, *supra* note 4, “The Institutional Creation of Water Shortages on Canadians Plains”, at 451.

“permissive” aspect of the Manitoba *Water Rights Act*.³⁹⁵ In fact, this act establishes what the minister **may do and provides considerable discretion**. That means, the minister **will do** what the policies and administrative rules recognise as the Act’s principle. Discussing the Manitoba water allocation system, this chapter adds to these old legal problems other issues related to the nature of water rights and restrictions from its prior allocation system. This is related to the lack of multiple uses approach, a water information system, an articulated pricing system and water policy mechanisms relevant for water conservation, scarcity problems and BWR demands. It also analyses existing legal mechanisms such as the vestigial riparian rights, reserved waters and the relevance of these for scarcity problems and BWR needs. Then, the BWR prohibition and its relevance to scarcity problems are studied. All problems, old or new, are related to lack of enforcement and monitoring.

1.2. The Nature of Water Rights: Mere Administrative Authorisation, Contract or Property?

The legal nature of water rights affects the availability of water. A legal water framework can encourage waste or conservation of water according to how water rights are established.³⁹⁶ For instance, systems based on prior allocation offer an “incentive to developers to claim more

³⁹⁴Water Use & Allocation, *supra* note 9, at IV.

³⁹⁵*Ibid.*, at 57, in the commentaries about guide principles of the *Water Rights Act*, it points out that “the Act is more permissive than prescriptive”.

water than they really required. in order to assure themselves of future supplies if their needs become greater.”³⁹⁷

In Manitoba, all provincial waters are vested in the Crown and the allocation of these waters is done through a permit system based on laws such as the *Water Rights Act*,³⁹⁸ and its regulations.³⁹⁹ A licensing system is supposed to manage the bundle of rights and duties in a water property regime. In fact, the Manitoba Water Resource Branch⁴⁰⁰ has a right to determine water use rules. Thus, this water agency has management and control of water resources. Certainly, a concrete control depends on the enforcement of laws and efficient licensing depends on a wise allocation system. Water allocation is the process that permits people to use water based on rules established by water laws. “It is a dual process of permitting some action or action by some people, and of restricting other actions or some actions by others.”⁴⁰¹ In Manitoba, except for domestic purposes, a

³⁹⁶The following authors sustain this statement: Percy, *supra* note 4, “The Institutional Creation of Water Shortages on the Canadian Plains”, at 452. Kemper, *supra* note 1, and Cruz, *supra* note 13.

³⁹⁷Percy, *supra* note 4, “Water Rights in Alberta”, at 148

³⁹⁸*Supra* note 19. S.2 establishes: “except as otherwise provided in this Act, all property in, and all rights to the use or diversion of, all water in the province, insofar as the legislative jurisdiction of the Legislature extends thereto, are vested in the Crown in right of Manitoba.”

³⁹⁹Manitoba Regulation 126/87 (April 18/87); 19/90 (February 3/90); 107/90 (June 2/90).

⁴⁰⁰Branch of Manitoba Conservation, who administers the *Water Rights Act*. “Administration of the Act comprises two separate program areas- Water Use Licensing and Water Diversion Licensing”, *Public Consultation*, *supra* note 9, at 53. Moreover, the Water Licensing sections are support by the three other major program areas: the Groundwater Management Section, the Surface Water Management Section and the Water Planning and Development Section.

⁴⁰¹Frank J. Trelease, *supra* note 328, at 10. The next section discusses the nature of the permission given and the rights holder.

valid and subsisting licence is required for any water use or diversion and construction, establishing or maintenance⁴⁰² of waterworks.

Thus, it is important to identify the legal characteristics of the rights conveyed by a water license:

If they are vested **contractual rights**, they may be secured against the provincial Crown on the basis that they constitute a contract between the Crown and the licence holder. If they are **property rights**, water licence holders may have even greater security of title, since property rights may be enforced not only against the grantor, but also against the whole world. However, if water licences are neither contractual nor property interests, but are **mere regulatory permissions**, title may be relatively insecure. Water licences may, as statutory permissions, be modified or revoked by the authorised government officials under their discretionary statutory powers.⁴⁰⁵

In Manitoba the water rights held by a licence are merely administrative authorisations. In addition, all this depends on political discretion. The Manitoba *Water Rights Act* establishes how the licence is “issued”:

Issue of licences 5(1) Subject to section 7, the minister may issue a licence to any person who applies therefore, authorizing the use or diversion of water for any licence purpose or the construction, establishment or maintenance of works for any purpose.⁴⁰⁴

⁴⁰² See S. 3 (1) and S. 3 (2). Domestic purposes is defined as “use of water obtained from a source other than a municipal or community water distribution system, at a rate of not more than 25, 000 litres per day, for household and sanitary purposes, for the watering of lawns and gardens and the watering of livestock and poultry.” S. (1), *supra* note 19.

⁴⁰³ Lucas, *supra* note 60, at 23 [emphasis added].

⁴⁰⁴ Manitoba *Water Rights Act*, *supra* note 19 [emphasis added]. Grammatically, “grant” or other word is not used by this act. and no other word is applied instead of “issue.” This language discussion is well developed by Lucas, *supra* note 60. at 25.

The minister⁴⁰⁵ has the authority to issue a licence to any person who applies. No legal formality binds the applicant and the minister, as in a contract. The administrative action establishes terms, conditions and the form of the water licence, based on the Manitoba water act and its regulations.⁴⁰⁶ The licensee has to accept these by way of an agreement. That suggests something similar to a contract but the licence and all of its terms and conditions cannot modify the requirements of the statute and regulations, to which a licence is subordinate.⁴⁰⁷

Consequently, any contradiction with the statute makes the licence invalid. The statute restricts the discretion of the administrator to issue and to impose conditions on water use licences. Even though this act appears to be more “permissive” than “prescriptive”, “many sections of the act describe what the minister may do, not what the minister will do.”⁴⁰⁸ The administrator cannot allocate water rights differently from the prior allocation approach, even if it would achieve beneficial uses. He/she has to follow the first come, first served principle, which is the statute’s major rule; otherwise, they are acting illegally. This approach often leaves the

⁴⁰⁵In Manitoba, water use licenses are issued by the Director of the Water Resources Branch on behalf of the Minister.

⁴⁰⁶Terms and conditions of licences 5(2) Every licence is subject to such terms and conditions as may be prescribed in the regulations and conditions such further terms and conditions as may be required by conditions the minister.5(3) Repealed, S.M. 1989-90, c. 90, s. 40. Form of licences 5(4) Every licence shall be in a form prescribed in the regulations or, where that form is not so prescribed, in a form prescribed by the minister. Certainly, an applicant who has its licence denied can appeal. Besides that a third person can object an application for water rights, S. 6 (3) (b) . *Manitoba Water Rights Act*, *supra* note 19.

⁴⁰⁷Lucas, *supra* note 60, at 27.

⁴⁰⁸*Public Consultation*, *supra* note 9, at 57.

new users without water where all resources are already allocated or when there is a shortage, because the senior licensee has priority over the others. Certainly this contributes to demands for new water supplies, often claimed by mechanisms such as BWR.

Water rights and obligations are statutory rather than contractual.⁴⁰⁹ In fact, water rights held by a licence are neither contractual nor property rights. A person who obtains a licence does not obtain a full property right to the quantity of water specified in the licence. He/she is entitled to an amount of water that can be diminished in certain circumstances and this right to use water cannot be transferred. Moreover, the benefit given by the licence can be suspended or cancelled, according to the statutes.⁴¹⁰ These statutory powers “suggest that licences convey mere statutory authorisations that are less than real property interests.”⁴¹¹ Thus a licence does not confer property rights but this does not mean that there are no property rights associated with water in the Manitoba system. There are vestiges of riparian rights for domestic uses and rights to protect water quantity and quality, as explained below.

Hence, in Manitoba water rights are issued in a licence, as an administrative authorisation. Certainly this is more flexible than a contract

⁴⁰⁹Lucas, *supra* note 60, at 28. Regarding the distinction between a licence and permit, the first is for uses and allocation, the second for water works.

⁴¹⁰However the *Manitoba Water Rights Act*, *supra* note 19, foresees few reasons for canceling any licence: see explanation bellow.

⁴¹¹Lucas, *supra* note 60, at 29. Furthermore, “the analysis of the statutes and of sample water licence documents strongly suggest that rights-creating documents in all

or property right in terms of allocating water rights. This legal nature could make the water system more flexible to reallocate water rights and resources from one use to another, achieving an efficient allocation, which avoids shortages, conflicts of water among the users, and needs for BWR. However, the prior allocation approach established by the *Act* does not allow such flexibility. Contrarily, the prior allocation approach is an obstacle to any attempt to establish terms and conditions in water licences that might be different from first come, first served. Certainly minimum security is required in water allocation. Entrepreneurs want and need to know the risks for their capital. Minimum security is also required to grant third party damages if water rights are suddenly reallocated. For instance, if BWR was allowed in the Manitoba system, and a “licensed” large-scale project was suddenly cancelled, how extensive would the damages be? As noted earlier, due to the size and indivisibility of its system, a BWR project’s characteristics require a reasonable life span⁴¹² to function viably.

Besides the environmental issues involved in the cancellation of a large-scale project, there could also be social and economic costs involving either the entrepreneurs or affected third parties in related geographical regions. Is it impossible to anticipate such costs? Yet, this security cannot be given *ad perpetuum*, and some flexibility is required in water allocation also because of needs for changes and adaptations, especially where water

jurisdictions reviewed do not convey real property interests, but are bare statutory licences conferring a personal right of use only.” *ibid.*, at 31.

⁴¹² See this project’s characteristic explanation in Chapter One.

is insufficient for all users or in times of shortage. Aquatic environmental protection and the maintenance of the hydrological cycle by adaptive actions also offers security for water rights.

How can BWR projects fit in this context where there is neither security enough for granting water rights to a long life project⁴¹³ nor flexibility enough for adaptation for water supply changes? In fact, BWR projects appear non-viable in any context, due to requirements of adaptation for water source conditions, which have changed and become limited all over the world. The concept of scarcity is not only physical but also social, political and economic. This can involve climate changes, population growth or loss, wrong decisions in allocating water resources, fluctuations in demand for water business, and so on. To forecast and to plan requires a reliable water database that can contribute to and lead the licensing system to an efficient distribution of resources. Certainly, essential water resource information is required before any BWR can be allowed. Moreover, authorisation to construct a water development project requires other regulatory approvals and permits, including an *Environment Act* licence. As noted in Chapter One, if BWR is allowed, the project authorisation can involve enormous institutional and political arrangements, which need different approvals from distinct departments, such as water resources, environmental, fishing, and so on.

⁴¹³Besides the administrative discretion, a license cannot exceed 20 years term. Section 5 (1), *Water Rights Act*. *supra* note 19; except for a construct drainage works for which a licence may be issued in perpetuity.

Unfortunately, the prior allocation restrictions and uncertain water rights in the licensing system are not problems unique to the Manitoba legal framework for water allocation. Manitoba lacks other mechanisms, such as a multiple uses approach, a water information system, and pricing mechanisms, that could promote more flexibility and contribute to the alleviation of scarcity problems and the need for a BWR system, as explained below.

In conclusion, even though water rights in Manitoba are not issued as contract or property rights, the administrative authorisation approach is not completely free to establish terms and conditions for water users. It is also not more flexible than “prior allocation” in making water available for new users. In this context, there is room enough for water transfer requests. However, there is not security enough for allowing water transfers that are high-risk projects.

1.3. Multiple Uses Purposes, Scarcity and BWR in the Licensing System

Except for domestic purposes, a valid and subsisting licence is required for water uses in Manitoba. This licence is supposed to establish direct control of the resources by granting water rights according to the *Water Act*. Theoretically, a water licence can be obtained for any consumption, use or discharge. These different uses have distinct environmental effects on water supplies.⁴¹⁴ The Manitoba legislation does

⁴¹⁴Effects on water supply: 1-consumption, decrease supply; 2-use, no effect since water is merely used for a specific purpose; 3-discharge, increase supply but causes problem of

not distinguish the type of water use for licensing, even though it presents a table of priorities⁴¹⁵ for which water may be used or diverted, or works constructed. The Manitoba *Water Rights Act*⁴¹⁶ distinguishes purposes such as domestic, municipal, agricultural, and irrigation, but not any effects from these different water utilisations. In fact, most of these purposes are consumptive water uses, the effects of which on a water supply are to decrease it, even though some water may be returned as water losses.⁴¹⁷ This compromises the efficiency of the licencing system in terms of allocating water supply, because the licencing process does not ensure the effects of different water uses when either issuing the licence or establishing the prior purpose. Regarding consumptive water uses, these can be related to minimising depletion and waste, to ensure equitable distribution of water.⁴¹⁸ However, the statutory preferences for water uses do not address these concerns.

Furthermore, water rights are often issued as an individual preference instead of for a group, such as fishery protection, wildlife preservation, flood protection, and there are no collective benefits. No pro-rating of available water is done among users. Even in times of shortage,

pollution. Cruz, *supra* note 13, at 7. In fact, pollution also effects supply since water cannot be used for instance for domestic uses.

⁴¹⁵S. 9, *supra* note 489.

⁴¹⁶*Supra* note 19, s. 9

⁴¹⁷Cruz, *supra* note 13, at 7. For instance, irrigation, industrial, agricultural are consumptive. Domestic purpose can also be consumption or use of water. Recreation is use of water, while municipal is discharge of water most the time.

⁴¹⁸Regarding the equitable distribution of water, where all water users have the same opportunities and rights, for instance between old and new users, regarding which legal

water disputes are solved by the application of temporal priorities. The “priorities of use do not override first in time first in right principle.”⁴¹⁹ In fact, “the only practical importance of the table of preferential uses is that it enables a person who requires water for a use with a high priority to expropriate a water right that is used for a purpose which is of lower priority.” For instance, agricultural communities can expropriate water that is used for industrial purposes, but not *vice versa*. Although the table of priorities offers a limited method for transferring water rights,⁴²⁰ this limitation can “seriously retard development as soon as demand for water exceeds the available supply.”⁴²¹ Moreover, “maximum development, in modern times, means multiple development, whenever the total net benefits of all consistent uses exceed those of a single use that forestalls the others.”⁴²²

instruments grant this equality, if there may be imposition and collection of water fees at fixed, nominal or graduate rates.

⁴¹⁹Water Use & Allocation, *supra* note 9, at 55. Furthermore, this public consultation pointed out that “the Act must be clear on the relationship between the use priorities and the first in time first in right principle.” at V.

⁴²⁰Percy has pointed out: “even if the table of priorities did reflect social preferences when it was enacted or amended, it would almost certainly be outdated today. In addition, it is founded on the false premise that it is possible to state that some uses of water are more important than others at all times and in all regions of a province,” Percy, *supra* note 4, “The Institutional Creation of Water Shortages on the Canadians Plains”, at 456. Therefore two characteristics of the table of priorities can contribute to its practical inefficiency: 1. being a limited method of transferring water rights; 2. being an inappropriate mechanism for establishing the “beneficial use” of water in different times and places. Furthermore, in practice, the table of priority is rarely applied, according to Ray Bodnaruk, manager of Licensing Water of Manitoba Conservation, *supra* note 452. He pointed out that the rule is the less applied the better, because to apply it means to achieve the extreme situation of limited water resources. In practice, according to him, water allocation has been done based on a “risk reasonable level” for avoiding shortage of water in a source. In a phone interview, 7 June 2001, I asked him if this level of risk takes into account potential unauthorised uses, he said no.

⁴²¹Percy, *supra* note 4, “Water Rights in Alberta”, at 149.

⁴²²Trelease, *supra* note 328, at 15.

The multiple use of water means that it is possible to have water utilisation with different purposes at the same time, such as domestic, industrial, agricultural, energy, and so on. The priority of water uses excludes the multiple uses principle. To choose one use over another does not allow multiplicity. As a result of a multiple use approach, any exclusive purpose — for instance, energy production — can no longer be a primary purpose for water law. In other words, all water users are now placed in an equal condition for accessing water resources. This equality of water access implies prevention of abuse, and sustainability in the use of water, and equality in quality and quantity controls. Otherwise, how will a future generation have water access if there has not been sustainability in present day water utilisation? Multiple use results in efficiency of water use that is a requirement for any awarding of rights to water.⁴²³ “Multiple use reduces the scarcity of water if several users each use the same unit in turn instead of competing for it. The multiple use of the water increases its unit productivity and hence aids in achieving the maximization goal.”⁴²⁴

The ability to transfer water rights is important not for a water market but to benefit society, by offering multiple uses. “Multiple development is not assured by the market mechanism. Private persons and

⁴²³In Brazil multiple use is a principle established by law. According to Article 13, Sole Paragraph of Law 9433/97: “[T]he award of rights to water shall maintain its multiple use”, *supra* note 18.

⁴²⁴Release. *supra* note 328, at 15. Commenting on water resource problems, “in the drier western parts of the United States, where demands could be met only by large-scale transfers of water, and even in the more humid regions, transfers of water resources, both in terms of space and function, are occurring”, the authors has suggested that the

firms are usually interested in a single-purpose use, and multiple uses result from such private projects only accidentally or when other uses are a profitable byproduct.⁴²⁵

Certainly, the legal mechanisms of a public environmental policy can fail to achieve multiple and beneficial uses of water. Furthermore, a public or private system may misunderstand the public interest in their decision-making.⁴²⁶

For instance, Manitoba legislation satisfies the prior allocation principle instead of the principle of multiple uses, whereas serving more users would help to clean the backlog of applications in the licensing system. In addition, in any BWR case, the multiple use of water has to be factored into the evaluation of environmental damage and its social realities. Is it possible to have BWR activities without damage to other water uses, such as navigation or fishing? In a case of conflicts between BWR and other water uses, which are the priorities? For instance, a water

concept of multi-purposes use as well integrated river-basin development could help to improve allocation techniques, "Choice in Water Use", *supra* note 365, at 548.

⁴²⁵*Ibid.*, at 16. Yet, regarding multi-purpose resource development projects and the inability of private interests to take into account social costs, see "Choice in Water Use", *supra* note 365, at 553. However, it does not mean that the public decision-making process is more perfect than in the private sphere, as regards property regimes. All spheres and regimes can fail, not for their nature but because of inappropriate management.

⁴²⁶ "The decision as to the nature and timing of any particular project rests with what can loosely be described as the political institutional process - that complex of vested-interest group lobbying, public emotion, personality clash, and protested compromise that takes place in committee rooms and council chambers throughout the world. The decision-making process itself is still only imperfectly understood, but it is certainly dependent upon the political institution, for although the allocation of multi-purpose water and land resources involves certain common problems, the final outcome (*i.e.* implementation of a plan) will differ according to the general policies and attitudes of

policy should consider fishing and fish habitat, forest practices and their impacts on the aquatic ecosystem, in water allocation and licensing decisions. The current water allocation system does not take into account the effect of quality on quantity allocation. It should.

The multiple uses approach requires foresight, planning, policing, enforcing and prevention.⁴²⁷ All that could also help in assessing BWR needs, opportunities and problems. The distribution of water rights under the Manitoba *Water Resources Act* is inadequate to deal with water problems in securing the most beneficial uses of water for future users. In fact, the water conflict has become complex, involving high competition for water from a growing population and the general economic development of the province. Consequently, the inefficiency of this system in allocating water rights and resources affects demands for new supplies of water and consequently contributes to transfer proposals such as BWR.

1.4. A Water Information System and BWR

Water use data and monitoring require regular reporting. Under the *Act*, the Minister may require any submission of water use records, which are terms and conditions in the license, according the regulation.⁴²⁸ However, implementation of a water information system depends on policy enforcement, which has not been implemented in recent

the nation in question". "Choice in Water Use", *supra* note 432, at 563. Thus, it is important stakeholders participation in any process of decision-making.

⁴²⁷Paraphrasing Trelease, *supra* note 328, at 45.

⁴²⁸See respectively: S. 5 (2) of *Water Rights Act*, *supra* note 19, and S. 8 of Man. Reg. 126/87, *supra* note 471.

years. The only concrete step taken for requiring water records has been a letter, sent to irrigators by the Manitoba Water Branch regarding withdrawal of groundwater from the Assiniboine Delta Aquifer (ADA).⁴²⁹ One passage in this letter illustrates that a water information system is not yet implemented:

As you are aware, under The Water Rights Act, all diversion and use of water for purposes such as irrigation requires a water rights licence. A condition of irrigation water use licences is that licensees are required to monitor and report on water use annually to Water Branch (WB). For several reasons WB has not enforced this licence requirement on the ADA as rigidly as we would like to have done. The need to do so was seen as not being critical as long as water allocation was generally below established allocation limits. However, as these limits are now being reached over much of the ADA, WB needs to determine, as accurately as possible, actual irrigation water usage.⁴³⁰

Because of the lack of water use information in Manitoba, enforcement of water rules has been deficient.⁴³¹ Without reliable water information it is not possible to distribute water resources equally. Water allocating can be compromised in terms of efficiency without realistic water data. How can a water conservation program be established and water supply improved if even the availability or non-availability of water resources is unknown?

⁴²⁹Letter dated 7 May, 2001 and assigned by Steven D. Topping, Director Water Branch, Manitoba Conservation.

⁴³⁰*Ibid.*, letter.

⁴³¹See public complains about lack of enforcement in Water Use & Allocation. *supra* note 9, at 60.

Water information implies sustainability and prevention of environmental damage.⁴³² Sustainability is understood as any development that "meets the needs of the present without compromising the ability of future generation to meet their own needs."⁴³³ As a result, any water allocation system should not allow water uses beyond the capacity to be naturally replenished both in quality and quantity. In addition, the prevention of environmental damage in water allocation could be a reason for suspension of any permission for water use. Suspension of water use could occur if, for example, such a use as BWR potentially puts the environment at risk. In other words, precautions related to water policy mechanisms mean the identification of damage, both real and anticipated, and the modification or the elimination of harmful environmental practices.

Environmental damage has been defined as "any injury to the environment caused by behavior or activity of [an] individual or corporation, public or private."⁴³⁴ The environment understood as a whole includes ecological and social aspects. Identification of damage is important to the maintenance of the integrity of any ecosystem, especially

⁴³² "[W]hereas the future domestic need for water is unknown, the availability of potable water is undetermined and the impact of climate change on precipitation, and hence water supplies, is uncertain and management of the resource must be on sustainability and reflect the precautionary principle relative to future supply requirements," British Columbia Environment, *A Freshwater Strategy for British Columbia* (British Columbia Environment: British Columbia Environment, Lands and Parks, Water Management, 1999) on line <http://www.ec.gc.ca/water/> (last update: March 2000); Environment Canada, *The Management of Water: Bulk Water Removal and Water Export* (Environment Canada: Fresh Water, 1999) on line < <http://www.ec.gc.ca/water/index.htm>> (last update: 18 August 1999).

⁴³³ UN World Commission on Environment and Development, *Our Common Future: the Brundland Report* (Oxford: Oxford University Press . 1987), at 8.

an aquatic environment that is essential to human beings. It is necessary to ask prior to any activity: how much is the development of society within its ecological and social aspects endangered? The concept of development is variously understood,⁴³⁵ but it should include sustainable development that upholds the environment as a whole.

Furthermore, the modification of practices depends on knowledge of the “status quo”⁴³⁶ and the identification of what is wrong or what needs to change. The application of a precautionary principle requires research into natural resources and their uses. This inventory should present both natural and social aspects that require technological⁴³⁷ and social research.⁴³⁸

As a rule, the technological research should analyse the current situation of water resources, as a base for predicting the future. It should also present new options, for example, regarding BWR, to search out water demands and scarcities. Questions that can be asked include: Which risks do the BWR’s activities present? Which choices could be present for

⁴³⁴Jose Afonso da Silva, *supra* note 151, at 207.

⁴³⁵It involves differing opinions regarding the meaning of necessity, and of social restrictions: see conclusion.

⁴³⁶For instance, diagnoses of the current water resources situation is requested in the Water Resources Plan as a policy mechanism in the Brazilian Water system.

⁴³⁷R. Brian Woodrow, “Resources and Environmental Policy-making at the National Level: The Search for Focus”, in *Resources and the Environment: Policy Perspective for Canada*, ed. by O.P. Dwivedi (Toronto: McClelland and Stewart, 1980), at 39: “[t]he “technologists”, who primarily are interested in natural resources and environment for their own sake and whose orientation is to design the best technical and administrative solutions without much reference to broad economic and social considerations.”

⁴³⁸*Law 9433/97, supra* note 18, the Water Resources Plans has “social indication” as one of its minimum requirements: an analysis of alternatives for population growth, for the evolution of production activities, and for changes in land-use patterns.

these activities, if there are choices? According to the precautionary principle, if there is a practice that is potentially harmful to the environment, should it be modified or abandoned?

Besides technical research, social research should also be done with the purpose of assessing public preferences. Are people informed and satisfied with the activities and projects that current policies allow? Do the costs of these projects, in the contexts of economic, social, environmental and political values, fulfill people's expectations? For example, who would like projects such as hydropower, or bulk water removal, in his/her community, if they have environmental risks? It is necessary to research public views and their changes to insure successful policy implementation. With community participation, an environmental policy can be more effectively merged with a decision-making process.⁴³⁹ Public participation requires public education. "To promote knowledge and awareness about water issues and water management, and encourage individual and community involvement in water conservation, re-use, protection, and stewardship activities"⁴⁴⁰ should be one of the water policy goals.

The lack of systematic water information gathering compromises water allocation, planning, management and enforcement. Consequently, without enforcement there is a high risk for uneven distribution of water among users, especially in a prior allocation system that tends to create

⁴³⁹*Supra* note 432 : "Without a collective commitment, by water uses and water managers, British Columbia's freshwater resource is vulnerable"..

shortages of water for new users.⁴⁴¹ Furthermore, the lack of enforcement can be more problematic in times of shortage. As a result, in this context, BWR demands can easily increase. However, if BWR is allowed, based on an unreliable water database, what disasters are we inviting?

1.5. Pricing and BWR

Fees for using water were emphasised by Manitobans in the public consultations as necessary: they “should be developed” and should “direct revenues to water management.”⁴⁴² The *Water Rights Act* does not directly establish a pricing system for “water resources” but provides that fees and charges that shall be paid in respect of applications, licences and permits. These can be specified by regulation.⁴⁴³ This means that the *Act* does not consider that water itself has to be paid for.⁴⁴⁴ In fact, even the fees for application and for industrial uses⁴⁴⁵ are very low. How can the small amount collected for these fees finance a water information system, a water resources monitoring program, or even establish more staff to clear up the backlog of licence applications? The low cost to users is not an incentive for water conservation. The current fees are an inefficient water policy

⁴⁴⁰ *A Freshwater Strategy for British Columbia*, *supra* note 432, Principles for Actions: Public Education/Awareness.

⁴⁴¹ In fact the water information system could help to solve problems from the prior allocation approach such as “the backlog of application”, see explain below in this section. because the solution for that “requires local knowledge into the licensing and procedures”, *Water Use & Allocation*, *supra* note 9, at 1

⁴⁴² *Ibid.*, at IV.

⁴⁴³ Section 26 (e), *supra* note 19.

⁴⁴⁴ The Brazilian water system established the economic value of water itself. Article 1, item II, Law 9433/97, *supra* note 18.

⁴⁴⁵ Reg 126/1987, S. 3 (1) and Schedule B, *supra* note 19. The maximum is \$ 50.00 for industrial uses.

mechanism in the allocation system in Manitoba. Yet, pricing has been used as a tool in other jurisdictions to achieve conservation purposes.⁴⁴⁶ The lack of any pricing mechanism in the Manitoba water system has contributed to waste of water, and consequently to decreased water supplies and to created shortages, which induces demand for BWR. In addition, the claim for BWR as a new water supply mechanism can also be claimed as an excellent "business", since to use water costs almost nothing. Bottling water, water export, and other "water business" sounds attractive when economic profits are high because of the low price of water use, especially if social and environmental costs are not taken into account, as is common for licensing large-scale projects.

If Manitoba water allocation had a pricing system, it could give the consumer the sense that water is a limited resource and an economically valuable thing. At the present, there is a reluctance to force people who use a large amount of water to use less, because water is public property and belongs to society. Yet since everybody has the same right to use water people who over-use water should pay for this over-use. The pricing of water can finance its administration and support educational programs, which are important tools. A pricing system could also finance an

⁴⁴⁶To literature about pricing water: Kemper, *supra* note 1; Musa Asad et. al. *supra* note 6. W. Bromley. "Property Regimes and Pricing Regimes in Water Resource Management." paper presented at the World Bank sponsored Workshop on Political Economy of Water Pricing Implementation (Washington, D.C., November 3-5). K. William Easter and M. Rosegrant, and A. Dinar, *Markets for Water: Potential and Performance*. (Norwell, Mass.: Kluwer Academic Publishers, 1998). M.P.A. Souza. "Cobranca e a Agua Como Bem Comum", *Caderno de Recursos Hidricos* 13, Vol. 1.

information water system and research programs needed for a reasonable water policy.

The Manitoba water system lacks an appropriate pricing mechanism that could stimulate more conservation, increase water supplies and decrease demand for water transfers such as BWR.

1.6. Reservation of Water and BWR issues

One exception to the prior allocation approach that is foreseen in the Manitoba legislation is so-called “reserved water”, which is a mechanism that permits allocation of water distinctly to the licensing system.⁴⁴⁷

The discretionary power related to reservation of water depends on the political will of the government in power.⁴⁴⁸ In Manitoba this power is in the hands of the Minister,⁴⁴⁹ and “he or she can allocate water among

June 1995. James Winpenny, *Managing Water as an Economic Resource* (London: Routledge, 1994).

⁴⁴⁷The Manitoba *Water Rights* establishes, in Section 13 : Reservation of water 13(1) Notwithstanding any other provision of this Act, the minister may reserve any unlicensed water (a) in order that a survey may be made as to how the water may be used or diverted to the greatest advantage of the residents of the province; or (b) for such uses and purposes specified by the minister as in his opinion will be of the greatest advantage to the residents of the province; and may fix a period of time within which reservation may be utilized, and Restriction on licences 13(2) Where water has been reserved under subsection (1), the minister shall not issue a licence in respect thereof except in accordance with the terms of the reservation. See also Percy’s commentaries about reserved water, “The Institutional Creation of Water Shortages on the Canadian Plains”, at 454, *The Framework of Water Rights Legislation in Canada*, at 16, *supra* note 4.

⁴⁴⁸According to Ray Bodnaruk, manager of Licensing Water of Manitoba Conservation Department, this distinct method of allocating water has been applied by the current government of Manitoba for retaining water for the “acceptable risk level”, *supra* note 382.

⁴⁴⁹S.1 establishes: “minister” means the member of the Executive Council charged by the Lieutenant Governor in Council with the Administration of this Act, *supra* note 19 (Manitoba Act) .

applicants at his or her discretion and can prescribe the relative order of precedence of the water so allocated.” “The applicants for reserved water must follow the ordinary procedures for obtaining a licence. It provides a useful means of ensuring that water at the prime sites for major projects is not pre-empted by licensees under the ordinary legislation.”⁴⁵⁰ This method of allocating water resources differs from the temporal priorities established by the legislation, based on prior allocation.

The reservation of water as a legal mechanism of allocation could be an attempt to achieve “beneficial uses”, multiple purpose uses or to grant ecological and public health purposes. In other words, it could be a policy mechanism for improving water supplies, granting future water uses and reducing needs for BWR. The manager of Manitoba Water Licensing affirms that the current policy has used reserve water to grant flow and water resources to an allocation based on “reasonable risk.”⁴⁵¹

The reservation of water for granting water supplies and for conservation purposes could contribute to balancing needs for BWR, resulting from inappropriations in the ordinary licensing system based on the prior allocation approach.

⁴⁵⁰ See Percy, “Water Rights Law and Water Shortages in Western Canada”, at 16. *supra* note 4. For other commentaries about reserved water see, *ibid.*, at 14-23; see also “Water Rights in Alberta”, at 153, *The Framework of Water Rights Legislation in Canada*, at 16-17, “The Institutional Creation of Water Shortages on the Canadians Plains”, at 454, *ibid.*

1.7. Riparian rights and BWR issues

Whether or not western provincial water laws abolished riparian rights has been a matter of controversy.⁴⁵² However, the major question is: to what extent have the water statutes affected riparian rights? In Percy's opinion, "it is clear that riparians in the Prairie provinces retain some rights to use water for domestic purposes without a licence. It is also arguable that riparians may retain the right to enjoin unlicensed diversions of water up-stream from their land."⁴⁵³ Lucas argues that "the rights conveyed by water licences are not of the same character as area common law riparian rights." "Percy has concluded that riparian rights have not been completely abolished in the western provinces, but he is equally clear that riparian

⁴⁵¹ Ray Bodnaruk, in personal interview, *supra* note 382.

⁴⁵²This controversy has to be "specifically" analysed in each western province and verified for each water act. For instance, commenting on riparian rights in British Columbia, Maureen Boyd Clark pointed out the "end" of rights. "Water, Private Rights and the Rise of Regulation: Riparian Rights of Use in B.C. . 1892-1939", *The Advocate*, March 1990, at 253. On the other hand, Christopher Harvey wrote in favor of the "life" of riparian rights, "Riparian Water Rights: Not Dead Yet", *The Advocate*, July 1990, at 517. Also Percy and Lucas point out no abolition of riparian rights in western provinces, *supra* respectively note 4 and 60.

⁴⁵³"Water Rights Law and Water Shortages in Western Canada", at 16, *supra* note 4—see also Percy, "Water Rights in Alberta", *supra* note 4, at 157. Also Percy, "Water Rights Law and Water Shortages in Western Canada", at 16, and *The Framework of Water Rights Legislation in Canada*, at 21, *supra* note 4. Percy pointed out that "the fundamental similarity of the water legislation makes it possible to employ authorities from the Australian jurisdictions and from British Columbia in assessing the status of riparian rights on the Canadian prairies, where there have been no reported cases dealing directly with the issue. However, it must be noted that the following discussion is not applicable to Manitoba, where a riparian's right to water, except for domestic purposes, has now been expressly removed by statute". Percy, "Water Rights in Alberta", at 159, *supra* note 4. He was talking about the *Manitoba Water Right Act*, 1970, s.11 (2), *supra* note 439. On the other hand, later, he mentions that "the Manitoba legislation does not expressly mention riparian rights. Manitoba prohibits any use of water without a licence, but the general prohibition, 'does not apply to a person using water for domestic purposes where the person has lawful access to the water' and that "the riparian can coexist with the licensing system", Percy, *The Framework of Water Rights Legislation in Canada*, respectively, at 20 and 21, *supra* note 4. This time, he

rights have at least been abrogated to the extent that they conflict with licensed uses under water legislation.”⁴⁵⁴

Christopher Harvey points out the importance of riparian rights in this age of concern for the environment “because riparian rights at common law protect not only the right to use water but the right to receive water in its natural state free from pollution. If the common law right to the use and flow of water has gone, has the right to receive water free of pollution gone with it? I say no.”⁴⁵⁵ In addition, I say neither the right to have “unaltered” water in quality nor the right to have “undiminished” water in quantity is gone. To have water without damage or risk of damage in quality and quantity⁴⁵⁶ is a right that is not abolished from riparian owners. As explained in this thesis, quality and quantity aspects of water cannot be separated if the concern is an appropriate water allocation that seeks equally to distribute water resources in an efficient and sustainable manner. These rights are not contrary to the licensing system in which riparian rights co-exist. Elizabeth Brubaker also points out the co-existence of

was talking about the *Manitoba Water Rights Act, 1982-83-84*, *supra* note 440, which similarly to the present act of 1988 did not expressly mention riparian rights.

⁴⁵⁴ Lucas, *supra* note 60, respectively at 21 and 22.

⁴⁵⁵ Christopher Harvey, *supra* note 452, at 517.

⁴⁵⁶ “Risk” because the major principle of environmental law is the precautionary principle. Especially, regarding water resources that are extremely sensitive to climatic, geologic, and social alterations precaution can play major rule in avoiding scarcity and consequential “desertification” process.

riparian rights in Canadian water system and their “ability” to be applied for protecting water resources.⁴⁵⁷

The Manitoba licensing system interferes substantially with riparian rights. Being property rights, the removal or abolition of riparian rights has to be made only by express words in a statute.⁴⁵⁸ Current Manitoba legislation does not even mention riparian rights, as the *Water Rights Act* of 1970 did: “Riparian owner has no rights without licence”, S.11 (2).⁴⁵⁹ But the present act prohibits any use of water without licence, except for domestic purposes.⁴⁶⁰ In Manitoba, riparian rights appear to be limited to domestic purposes. Riparian owners can exercise their rights for ensuring the licensing system’s enforcement and for protecting water sources from harmful uses like BWR when it affects the stream and flow of water.

This thesis defends the existence of riparian rights different from their old structure⁴⁶¹ but within their “new frames” established by the

⁴⁵⁷Elizabeth Brubaker, *Property Rights in the Defence of Nature*, Environment Probe (Toronto: Earthscan, 1995), see especially the Part I: The Golden Age of Common Law Property Rights. 3. Without Obstruction, Diversion or Corruption, at 53.

⁴⁵⁸Based on Percy’s explanations, *ibid.*

⁴⁵⁹Manitoba *Water Right Act*, R.S.M. 1970.

⁴⁶⁰Manitoba *Water Right Act*, 1988, *supra* note 19.

⁴⁶¹Certainly the “old” structure of “absolute” riparian rights did not contribute to a wise distribution of water resources among users. The “inability” of the riparian doctrine to accommodate major uses of water and its “ability” to be an obstacle to the development of regions where water was scarce has been pointed out. For instance, Cruz has pointed out that “the riparian doctrine thrives well in area where water is abundant and sources are well distributed. Competition for use is not high. In this case, confining the use of water to land contiguous to streams will not make any difference in the development of good land use through a system of water regulation. However, in areas where land is abundant but the available water supply is deficient limiting the use of water to those lands bordering the stream will adversely affect the use of non-riparian lands. The superior right to water utilisation accorded the riparian owners will definitely inhibit the development of other lands with good productive capacities. Likewise, in the allocation of water, the riparian rule of natural flow and reasonable use does not guarantee

licensing system, in which they do not have powers to inhibit water development but still have legitimacy to be used to protect the flow of the stream from any detriment. That does not contradict the statute's purposes to allocate water resources and protect their quality and quantity aspects. Riparian rights could be exercised to ensure enforcement of the licensing system, regarding non-authorised uses such as BWR. Brubaker has presented some legal cases that involve riparian rights and the defence of water quantity aspects, such as *Swindon Waterkorks v. Berks Canal*, *Warren v. Gloserville*.⁴⁶²

Riparian defence of water quality has been more frequent than that of water quantity. Still, riparian rights can be used to protect waters against decreasing quantity. This ability of riparian rights to protect quantity has not been applied in Manitoba. No riparian rights have been accepted in practice, according to the manager of Water Licensing.⁴⁶³ The *Act* neither explicitly abolished riparian rights nor established alternatives or any mechanisms to address instream flow needs.⁴⁶⁴

beneficial use for maximum land productivity". *supra* note 13, at 11. Percy has also stressed these riparian characteristics under either "natural flow" or "reasonable use" theories. see "Water Rights in Alberta", at 143, and *The Framework of Water Rights Legislation in Canada*, at 4. *supra* note 4. See also I. A. McDougall's commentaries on the "inadequacies of the riparian doctrine". *The Churchill Diversion: Development of a Legal Framework for the Management of Canadian Water Resources*, the Management of Canadian Water Resources, Canada Environment, September, 1971, at 26.

⁴⁶²Brubaker. *supra* note 457, respectively, at 266 and 274; *Swindon Waterworks Company Limited v. Wilts and Berks Canal Navigation Company* (1875), L.R. 7 H.L. 697, 56. 66 n. 17, 266-67, 279, 285, 287 nn. 3-5, and *Warren v. City of Gloserville*, 81 App. Div., 291, 293, 80 N.Y.

⁴⁶³Personal Interview with Ray Bodnaruk, *supra* note 382.

⁴⁶⁴Instream flow needs, ecosystem needs and aesthetics were pointed as not covered in the *Act*, thus the regulation and management of these needs require a public consultation, *supra* note 9, at 5.

Riparian rights co-exist with the licensing system because the Manitoba Water Rights Act did not explicitly remove them.⁴⁶⁵ The extension of riparian rights is different from their old framework that used to restrict other water uses. Today, the “new” riparian rights could be used to defend instream flows or used against any other potential BWR harmful effects.⁴⁶⁶

1.8. BWR Prohibition and its Relevance to Scarcity Problems

As mentioned earlier, Manitoba has a prohibition on BWR established by the *Water Resources Conservation and Protection and Consequential Amendments Act*.⁴⁶⁷ This act is based on the precautionary principle and on sustainable water resource management practices.⁴⁶⁸ It seeks to “establish a water resource management scheme that will ensure that removal of water from Manitoba’s water basins is not done in quantities that could, individually or collectively, have significant adverse effects on the ecological integrity of Manitoba’s water resources or their associated ecosystems.”⁴⁶⁹ A BWR prohibition is to avoid the risk of economic, social and environmental impacts, such as potential water quantity and quality damages.

⁴⁶⁵ Manitoba act, *supra* note 19.

⁴⁶⁶ Instream flow needs is another issue that Manitobans pointed out that “should be addressed in the Act.” for instance, “groundwater reservations required for aquifers supporting base flows”, “establishing and protecting instream flow needs as an immediate priority for sources approaching full allocation,” at IV, *supra* note

⁴⁶⁷ BWR Act, *supra* note 19. This also was one of the Manitobans’ claim in the public consultation, *supra* note 446, about water allocation and used. at least, it is address in legally on “the paper.”

⁴⁶⁸ Water Resources Conservation and Protection, *supra* note 19.

⁴⁶⁹ *Ibid.*, Preamble of Act.

According to the preamble of this *Act*, “ the conservation and protection of Manitoba’s water resources, and of the ecosystems associated with and reliant upon those water resources, are essential to the long-term environmental, economic and social well-being of Manitoba”.⁴⁷⁰ As a result, this *Act* prohibits transfers of water between Manitoba water basins or removals of water from them. However, there are certain situations in which this prohibition does not apply for “water that is in small containers; needed for carriage of people, animals, food or products in vehicles, aircraft or water-vessels or for the operation of vehicles, aircraft or water-vessels; used in manufacturing processes; used for short-term safety, security or humanitarian purposes”.⁴⁷¹

This act does not specifically fulfil the definition of BWR⁴⁷² established by the federal government campaign launched in February 1999. However, it considers BWR to be any amount of water that could have significant adverse effects on the ecological integrity of Manitoba’s water resources or their associated ecosystem. So, it is important to know who will be affected and how will any significant adverse effects impact on ecological integrity. That is not clear in this *Act*.

The BWR prohibition may be a mechanism for water conservation in the Manitoba water allocation system. However, the BWR related *Act* establishes that its definitions and interpretations will be done by

⁴⁷⁰*Ibid.*

⁴⁷¹*Ibid.*

⁴⁷²Federal programa. *supra* note 4.

regulations; and there is no certainty that this *Act* and other legislation will not be changed in the future. This *Act* can regulate contrary to its present intentions in the future. For instance, at present, Newfoundland has a BWR prohibition but recently the Premier of this province announced his wish to change this position. According to a statement made by Newfoundland Premier Roger Grimes, his province has "an excess of fresh water that is not likely to be used or needed in Newfoundland and Labrador in the foreseeable future." "In order to extract some value out of this excess water, Mr. Grimes has thrown his support behind a proposal to export 13 billion gallons annually from Gisborne Lake." Allowing BWR, the Premier looks to untapped lakes and free-flowing rivers, under the misapprehension that:⁴⁷³

...water is being 'wasted' unless tapped or otherwise generating some sort of profit....The idea that water can simply be shipped, channelled or diverted from the 'wrong places' to the "right places" is compelling to those politicians, businessmen and others who regard water as a commodity. In a world where the availability of clean water is increasingly recognized as the most significant constraint on economic development, the emergence of global trade in bulk water as a commodity seems only natural. In this view, allowing water to remain in its pristine state is regarded as inefficient, wasteful, and -- ironically -- unnatural.

⁴⁷³ "Water Exporters are all Wet" by Jamie Linton, *Globe and Mail*, Tuesday, 29 May 2001. "Newfoundland Premier Roger Grimes doesn't get it, says author. Pristine water is never wasted: it's vital to all life."

As well, the federal government's BWR position has been fluctuating. Bill C-6 appears to point toward BWR prohibition but federal interest in water exports continues to appear in the media.⁴⁷⁴

The BWR prohibition is a water allocation mechanism that may contribute to water conservation and perhaps alleviate intra-provincial shortages. But this act must be enforced, so that the users know they cannot use water transfers as a mechanism for a new water supply. They will have to use water wisely, otherwise shortage is certain. As well, besides Manitoba's BWR prohibition, its water allocation system needs changes regarding "reallocation" of water rights and resources for new users, in order to avoid shortages. Otherwise the pressure from those who want BWR will continue.

PART 2 - CEARA: THE WATER ALLOCATION SYSTEM

2.1. Old Issues in Ceara Water System

Knowledge of the evolution of Brazilian water law can contribute to our understanding of the Ceara water allocation system. Unlike Canada's, the Brazilian federal government has exclusive jurisdiction over water resources, and the states only supplementary jurisdiction. Thus, unlike Manitoba water allocation, based exclusively on its provincial legal framework, Ceara has been affected by both federal and state water legislations, although Ceara state has its own water state legislation.

⁴⁷⁴ "Ottawa set to put Price on Nation's Fresh Water" by Mark MacKinnon. Source: Toronto Globe and Mail. Thursday, May 31, 2001.

The Brazilian federal water legislative history has basically three stages: 1) before the National Water Code, 2) after the National Water Code, and 3) after Brazil's 1988 Constitution and its water issues regulation. Each of these historic stages has their own subdivisions and relevant facts. Here this history will be brief,⁴⁷⁵ focusing mainly on property regimes established for water resources during the water legal system's evolution.

1. Before the National Water Code. In the first stage previous to the Imperial Constitution (1824), a Portuguese Imperial Ordering⁴⁷⁶ established that navigable rivers were real property. Hence, uses of water depended on the Imperial concession. However, against this Crown prerogative, the Charter of 1804 granted the free use of water for riparian owners or for agricultural and industrial benefits. This free use of water could be based on pre-occupation of the land according to this new law. This circumstance created several contradictions and abuses in water uses because of the lack of rules regarding non-navigable waters in the Imperial Ordering. The situation changed when, in a second stage, after promulgation of the Imperial Constitution (1824), the Portuguese Imperial Ordering⁴⁷⁷ was not applicable to Brazil and real property rights in water were transferred to the national domain. However, the Charter of 1804 was

⁴⁷⁵Part of this historical explanation is based on Cid Tomanik presentation regarding the Brazilian water situation. *supra* note 65, at 603-604, paraphrased and translated by Sandra Cilce De Aquino.

⁴⁷⁶*Ordenacao, L. II, Titulo 26, §8, Cid Tomanik. ibid.*

⁴⁷⁷*Ibid.*

enforced until promulgation of the National Water Code (1934), which meant free use of water for riparian owners and for agricultural and industrial users.

2. After the National Water Code. In 1934, the National Water Code⁴⁷⁸ was enacted. Like the Charter of 1804, this law recognised water as a real property. According to this code water⁴⁷⁹ resources could be classified as: 1) public waters (*aguas publicas*): a) public for collective use (*aguas publicas de uso comum*); and b) public under state ownership (*aguas dominiais*);⁴⁸⁰ and, 2) private waters (*aguas particulares*).⁴⁸¹ “In addition, the Code stipulated that all water resources occurring in any region periodically affected by drought, *i.e.* (sic), in the Drought Polygon, were public. Legally, therefore, no privately owned water resources could exist in Ceara.”⁴⁸² However, this rule of the code has never been regulated. Boreholders and other private appropriators of water in these dry areas have existed, for lack of enforcement of the code’s rules. Thus, in this period, private waters were waters within private property that were not

⁴⁷⁸ Decreto nº 24.643, de 10 de Julho de 1934, Diário Oficial da União (DOU) 24-07-34.

⁴⁷⁹ *Ibid.*, Water Code. Código de Aguas. Livro I. Aguas em geral e sua propriedade: Capítulo I, Aguas Publicas; Capítulo II, Aguas Comuns; Capítulo III, Aguas Particulares. [translation by Sandra Cilce De Aquino].

⁴⁸⁰ Articles 1 and 29 of Water Code, *ibid.*

⁴⁸¹ Article 8 of Water Code, *ibid.*

⁴⁸² Kemper, at 115, *supra* note 1. See article 5 of Water Code, *supra* note 478.

classified as public waters. Only federal, state or municipal governments, according to the code, could legally own the public waters.⁴⁸³

In this system, water use required an administrative concession or authorisation.⁴⁸⁴ A bill elaborated by Alfredo Valladao, based on a French model, initially established the distinction between concession and authorisation as a licensing mechanism to allocate water. It established that an administrative concession was necessary for diversion of any public waters. As well, an administrative authorisation for the use of private water was needed.⁴⁸⁵ This distinction in France harmonised its Civil Code rules with its administrative rules, according to the different water property regimes, public and private. In fact, the administrative authorisation did not create water rights for the licensees but only allowed them to exercise water rights established by the Civil Code. However, this proposal was not successful, and the Brazilian Water Code took a different direction from this French approach. Instead of separating concession from authorisation, for public or private regimes respectively, the code established this distinction based on the “purpose of the use” criterion (*o critério da finalidade de uso*).⁴⁸⁶ That is, it was necessary to obtain: 1) for public purposes, an administrative concession, and 2) for other purposes, an

⁴⁸³ Article 29 of Water Code, *supra* note 478. This state ownership changed with the 1988 Constitution that established no water ownership for any Municipality. Nowadays, only states and federal governments have water ownership.

⁴⁸⁴ Article 46 of Water Code. *ibid.*

⁴⁸⁵ Cid Tomanik’s explanation, *supra* note 65, at 604, translation by Sandra Cilce De Aquino.

⁴⁸⁶ Article 43 of Water Code. *supra* note 478.

administrative authorisation.⁴⁸⁷ This distinction was significant for its legal consequences. Previously, the concession could be delegated or not because it was awarded for public purposes. The authorisation did not delegate public power to authorised persons. Besides that, there were other legal effects for each of these administrative mechanisms, such as compensation that would result from any cancellation of water rights held by the licensee. Consequently, compensation could represent transaction costs for the governmental agency.

By Brazilian Civil Code rules⁴⁸⁸ water was regulated based on the principle of neighbour rights and on the utilisation of water as a private right with limited economic value, for example, Article 66, water property classification.⁴⁸⁹ But the Brazilian Water Code changed this civilianist basis, establishing water as a resource with economic value for society, deserving special governmental status:⁴⁹⁰ “Art. 36. Everyone is allowed to use any public waters, according to the administrative regulations: item 2. the joint use of such waters can be gratuitous or paid for, as the laws and regulations of the pertinent administrative agency require.”⁴⁹¹ This rule

⁴⁸⁷ See article 43 Water code, *ibid.*, and Cid Tomanik, *supra* note 65, at 605.

⁴⁸⁸ Lei nº 3.071, de 1º de Janeiro de 1916. Código Civil Anotado, 3ª edição, aumentada e atualizada. (São Paulo: Editora Saraiva, 1997)

⁴⁸⁹ Fernando Quadros Da Silva, “A Gestão dos Recursos Hídricos após a Lei 9433/97 de 08 de Janeiro de 1997”, in *Direito Ambiental em Evolução* (Curitiba: Jurua Editora 1998), at 83; translation by Sandra Cilce De Aquino.

⁴⁹⁰ Fernando Quadros Da Silva, *ibid.*, at 83.

⁴⁹¹ Article 36 of Water Code, *supra* note 478: Book II Exploitation of Waters, HEADING II Exploitation of Public Waters, Preliminary Disposal, Water Code (Art. 36. É permitido a todos usar de quaisquer águas públicas, conformando-se com os regulamentos administrativos: § 2.º O uso comum das águas pode ser gratuito ou retribuído, conforme as leis e regulamentos da circunscrição administrativa a que

could be also used to grant free use of water to any watercourses or sources for the fulfilment of basic needs.⁴⁹² The economic value of water established by the water code was previously linked with the utilisation of water, such as the generation of energy, and not with water itself, as it is now in the 1988 Constitution.⁴⁹³

The Water Code focused the law on waterpower utilisation, which had become the symbol of industrial progress in Brazil since the 1930s. Some of the Water Code clauses continue under the 1988 Constitution, such as Article 98, regarding the prohibition on building anything that might pollute or make useless any well and spring waters.⁴⁹⁴ This includes the prohibition of BWR projects if they result in such water damage. Furthermore, these remaining clauses of the code are valid for all waters in Brazil, whether state or federal, since the code is a national law. But the 1988 Constitution introduced the definitive and explicit abolition of private waters, a major change in the water code system. Thus, there are no longer “riparian rights” in the Brazilian system. The Constitution established state

pertencerem -Livro II Aproveitamento das águas. TÍTULO II Aproveitamento das águas públicas, Disposição Preliminar, Código de Águas). [translation by Sandra Cilce De Aquino].

⁴⁹²Article 34 of Water Code. *ibid.*

⁴⁹³With the constitutional new view of water and with the establishment of a national water policy, the Environmental Ministry is the authorised agency to plan and control water resources instead of the National Department of Water and Electric Energy (Departamento Nacional de Água e Energia Elétrica- DNAEE). That is, the focus on “water and electric energy” was replaced by “water and environment”, according to this new view of water resources.

⁴⁹⁴Article 98 of Water Code (Art. 98 -São expressamente proibidas construções capazes de poluir ou inutilizar, para uso ordinário, a água do poço ou nascente alheia, a eles preexistentes), *supra* note 478. [translation by Sandra Cilce De Aquino]. However, the code did not directly regulate water quantity issues that can be related to the prohibition of the construction of more storage works than a water course could support.

ownership, and waters henceforth are vested only in the federal or states governments.

3. After Brazil's 1988 Constitution. Since the Constitution of 1988⁴⁹⁵ water has been viewed differently. Now it is a public property with economic values that need to be assessed and its multiple uses recognised, which means that water utilisation can have diversified purposes at the same time, according to Law 9433/97.⁴⁹⁶ This established the National Policy of Water Resources, initiated the National System of Water Resources Management, and regulated Article 21, Clause XIX of the Federal Constitution. The goal of this law is a unified system for federal, state and municipal policies for a rational use of water. Moreover, Law 9433/97 establishes that water administration has to be de-centralised with

⁴⁹⁵Brazilian Constitution, *supra* note 150.

⁴⁹⁶Law 9433/97, *supra* note 18. Art. 1. The National Water Resource Policy is based on the following principles: -Water is public property; -Water is a limited natural resource, which has economic value; -When there is a shortage, priority in the use of water resources is given to human consumption and the watering of animals; -The management of water resources should always allow for multiple uses of water; -The river basin is the territorial unit for the implementation of the National Water Resources Policy and the actions of National Water Resources Management System; -The management of water resources should be decentralized and should involve participation by the Government, the users, and the communities. [emphasis added]. in original Art. 1º A Política Nacional de Recursos Hídricos baseia-se nos seguintes fundamentos: I - a água é um bem de domínio público; II - a água é um recurso natural limitado, dotado de valor econômico; III - em situações de escassez, o uso prioritário dos recursos hídricos é o consumo humano e a dessedentação de animais; IV - a gestão dos recursos hídricos deve sempre proporcionar o uso múltiplo das águas; V - a bacia hidrográfica e a unidade territorial para implementação da Política Nacional de Recursos Hídricos e atuação do Sistema Nacional de Gerenciamento de Recursos Hídricos; VI - a gestão dos recursos hídricos deve ser descentralizada e contar com a participação do Poder Público, dos usuários e das comunidades. Law 9433/97, *supra* note 18. As noted in Part One, the multiple uses principle can be a mechanism to reduce water scarcity, consequently it can also reduce the claims for BWR.

participatory management in each river basin unit. Thus, state participation was foreseen.⁴⁹⁷

In the nineties, the Brazilian States established their water management systems⁴⁹⁸ based on decentralised control throughout river basins and with public participation, in accord with constitutional requirements and Law 9433.⁴⁹⁹

Thus, state water regulations are quite recent. State waters had been under strong federal hands until the new constitution. In Ceara, “for decades the state left the actual management and allocation of water resources to DNOCS”⁵⁰⁰ (*Departamento Nacional de Obras Contra as*

⁴⁹⁷ Law 9433/97. *ibid.* Brazilian States have to limit their water rules and policies in this national legal framework. “The National Water Resources Policy foresees not only the drafting of steering plans for water resources, by State and by River Basins, many of which have already been or are being developed, but also the formulation of a National Water Resources Plan. This National Plan, which will formulate the guidelines for integrating water management with management of land use and occupation, is undergoing development at the Water Resource Secretariat...The major constraints faced by the Government in reaching its objectives in the area of integrated management of water resources include: -the short period of existence of the sector itself, institutionalized by Law N° 9433/97;-insufficient financial resources;-fragile existing institutional framework;- lack of specialization and capacity building of human resources;-deficiencies in controlling the use of natural resources.” Freshwater Agenda 21 on line <www.un.org/esa/agenda21/natlinfo/countr/brazil/natur.htm#freshw>

⁴⁹⁸ Sao Paulo’s water law was a “landmark” in water legislation because it was the first to establish this kind of regulation, before the federal law, in 31 December 1991. Ceara’s water law also preceded the federal water law. From 27 federal entities (26 States and 1 Federal District), the 17 following entities each have their own water law : Alagoas (Law 5.965/97), Bahia (Law 6.855/95), Ceara (Law 11.996/92), Distrito Federal (Law 512/93), Espirito Santo (Law 5.818/98), Goias (Law 13.123/97), Maranhao (Law 7.052/97), Mato Grosso (Law 6.945/97), Minas Gerais (Law 11.504/94), Para (Law 5.817/97), Paraiba (Law 6.308/96), Pernambuco (Law 11.426/97), Rio Grande do Norte (Law 6.908/96), Rio Grande do Sul (Law 10.350/94), Santa Catarina (Law 9.748/94), Sao Paulo (Law 7.663/91), and Sergipe (Law 3.595/95). Furthermore, Amapa and Parana are currently working on their bills of water law, and Mato Grosso do Sul has an environmental council regime for its State Council of Environmental Control regulations (Deliberacao do Conselho Estadual de Controle Ambiental: CECA/MS 003/97).

⁴⁹⁹ *Ibid.*

⁵⁰⁰ Kemper, *supra* note 1, at 120.

Secas, the National Department of Works Against Droughts). The consequence of this historical federal centralised administration⁵⁰¹ over water was an inefficient hydrologic solution focused on dam construction. These dams were constructed publicly or privately in a regime of cooperation, which meant that landowners received public finances for these water works. These Federal drought alleviation programs have failed over the past century.⁵⁰² In fact, this water management system created more social and economic problems instead of solving scarcity problems. “For a long time large land owners, on whose properties the dams were constructed, had no incentives to use the water during non-drought periods and others had no legal right to the stored water other than for domestic use. In other words, water was rather cheap for some and inaccessible for

⁵⁰¹In this historic situation, the main federal agencies have been DNOCS and SUDENE (Superintendência do Desenvolvimento do Nordeste- Superintendency for the Development of the Northeast). The second was created for reducing DNOCS power and for corruption problems: however, ironically SUDENE was extinct by May 2001, as a result of investigation of corruption. SUDAM (Superintendência do Desenvolvimento da Amazonia- Superintendency for the Development of Amazon) was also extinct last month for the same reason: corruption.

⁵⁰²Anthony L. Hall, *Drought and Irrigation in North-East Brazil* (Cambridge: Cambridge University Press, 1978); M.C. Andrade, *A Seca: Realidade e Mito* (Pernabumco: Editora Asa, 1985); J. Coelho, *As Secas do Nordeste e a Industria das Secas* (Petropolis: Editora Vozes, 1985); A. Magalhaes Rocha, “Drought and Policy Responses in the Brazilian Northeast”, Donald A. Wilhite (ed.) *Drough Assessment, Management, and Planning: Theory and Case Studies* (Boston: Kluwer, 1993); I. Livingstone and L.M. Assuncao, “Engineering vs. Economics in Water Development: Dam Construction and Drought in North-East Brazil”, *Journal of Agricultural Economics*, Vol. 44, N° 1; Michael H. Glantz, “Drought Follows the Plow: Cultivating Marginal Areas”, *Climate Variability, Climate Change and Social Vulnerability in the Semi-arid Tropics* (Cambridge: Cambridge University Press, 1996) at 126, and Donald A. Wilhite, “Reducing the Impacts of Drought: Progress Toward Risk Management”, *ibid.*, at 148; Adelia De Mello Branco, “Women of the Drought: a Study of Employment, Mobilization and Change in Northeastern Brazil”, Ph. D. Degree, Faculty of Graduate Studies , Department of Sociology & Anthropology, the University of Manitoba, Winnipeg, Manitoba, Canada, 1997, and *Mulheres da Seca: Luta e Visibilidade numa Situacao de Desastre* (Joao Pessoa: Editora Universitaria, 2000).

others.”⁵⁰³ Where was the real need for waterworks such as dams and reservoirs, if water was stored and not distributed? Suppose that Ceara had hydrological conditions for a BWR project, how could it be implemented in these “centralised” management conditions?⁵⁰⁴ Would such a large-scale project be done at public cost only for supplying a few “privileged” users? What are the alternatives for Ceara and other northeast states with scarcity problems?

“Water is an important issue in Ceara, both for historical reasons, such as the memory of the deaths of hundreds of thousands of nordestinos during past drought periods, but also for contemporary reasons because Ceara is one of the most dynamic states in Northeast Brazil.”⁵⁰⁵ Thus, the government of Ceara established its own state water legal framework, instituting the Secretariat of Water Resources in 1986; establishing the State Water Resources Policy through its state Constitution in 1988; and passing the State Water Resources Law in 1992. There is still some federal intervention allowed by the constitutional framework. In Ceara’s case, there are special effects from this constitutional structure because of an odd constitutional rule that establishes an exception to control over state waters

⁵⁰³Kemper, *supra* note 1, at 101.

⁵⁰⁴In fact, Ceara does not have water resources to be transferred, but it could receive water from other places, with supposed “infinite” sources of water such as from the Sao Francisco River Basin. The Sao Francisco River transposition has been discussed as a solution for Brazilian Northeast scarcity, which federal government has been “dreamed” to implement since 100 years ago; see Chapter One and Two.

⁵⁰⁵Kemper, *supra* note 1, at 22.

when they are stored in facilities built with federal funding.⁵⁰⁶ Thus, Ceara has to negotiate a delegation of state control for its reservoirs that have been implemented by the federal government.

Ceara's formal institutional arrangements related to its water system are based on the following domestic water laws and policies: relevant parts of the Ceara Constitution,⁵⁰⁷ the Ceara Law 11996/92,⁵⁰⁸ Decree 23067/94,⁵⁰⁹ Decree 23068/94,⁵¹⁰ Decree 24264/96,⁵¹¹ Decree 24870/98,⁵¹² Decree 25443/99,⁵¹³ Law 10147/77,⁵¹⁴ Law 10148/1977,⁵¹⁵ Decree 14535/81,⁵¹⁶ Law 12522/81,⁵¹⁷ Law 12664/96,⁵¹⁸ as

⁵⁰⁶Brazilian Federal Constitution. *supra* note 150. Article 26. § 1: see Chapter 4. item 1.1 and 1.2.

⁵⁰⁷*Ceara State Constitutional of 1989*, which is accessible in Portuguese on Ceara Water Resources Secretariat (SRH). *Constituicao do Estado do Ceara*, on line <<http://www.srh.ce.gov.br/frame-institucional.htm>>

⁵⁰⁸Law 11996/92 establishes the State Water Resources Policy. *Lei nº 11.996 de 24 de Julho de 1992*. *Política Estadual dos Recursos Hídricos*, publicada no *Diario Oficial do Estado* nº 15.860 (Parte I), pg)1. de 29/07/92.

⁵⁰⁹Decree 23067 regulates the Article 4 of Law 11996 and creates the water rights award system. *Decreto nº 23.067 de 11 de Fevereiro de 1994*, publicado no *Diario Oficial do Estado* nº 16.240 (Parte I), pg 12, de 18/02/94.

⁵¹⁰Decree 23068 regulates the technical control of water works such as dams, channels, storage dams, wells. *Decreto nº 23.068 de 11 de Fevereiro de 1994*.

⁵¹¹Decree 24264 regulates the Article 7 of Law 11996 regarding fees for water uses. *Decreto nº 24.264, de 12 de novembro de 1996*, publicado no *Diario Oficial do Estado* nº 16.920 (Parte I), pg 1. de 12/11/96.

⁵¹²Decree 24870 changes some rules of Decree 24264. *Decreto nº 24.870 de 01 de Abril de 1998*, publicado no *Diario Oficial* ano I, nº 045, pg 1, de 08/04/98.

⁵¹³Decree 25443 change the Article 22 of Decree 23067. *Decreto nº 25.443 de 28 de Abril de 1999*, publicado no *Diario Oficial do Estado*, Serie 2, Ano II, nº 305, pg 02, de 03/05/99.

⁵¹⁴Law 10147 regulates soil uses for protecting water resources in metropolitan areas of Fortaleza (Ceara's Capital). *Lei 10.147 de 01 de Dezembro de 1977*, publicado no *Diario Oficial do Estado* nº 12.239 (Parte I), pg 5, de 09/12/77.

⁵¹⁵Law 10148 regulates the preservation and the control of water resources. *Lei nº 10148 de 02 de Dezembro de 1977*, publicado no *Diario Oficial do Estado* nº 12242 (Parte I), pg 2, de 14/12/77.

⁵¹⁶Decree 14535 regulates the Law 10148. *Decreto nº 14.535 de 02 de Julho de 1981*, publicado no *Diario Oficial do Estado* nº 12/242 (Parte I), pg 2, de 14/12/77.

well on related federal legislation such as relevant parts of the Federal Constitution,⁵¹⁹ National Water Code,⁵²⁰ Law 9433/97,⁵²¹ and Law 6839.81.⁵²²

Like the Manitoba system, Ceara's historic legal roots have witnessed scarcity among water users, which can create needs for BWR. "Private water rights" and federal centralised water control have contributed to shortages and to increased needs for water transfers, even though the new Brazilian water legal framework theoretically abolishes these. It remains difficult to shift from this historic legal framework to the new state water legal framework and to establish an exclusive state water management. That has been the challenge in Ceara state. In addition, any change in mentality in using water requires strong enforcement of the new state water rules. Thus, to manage existing supplies better and to make reasonable decisions about water resources, future financial demands will be large for the Ceara water allocation system.

2.2. The Nature of Water Rights: Merely Administrative Authorisation, Contract or Property?

As in Manitoba, in Ceara government owns all water resources.⁵²³

Ceara water resources are allocated through a permit system based on *Law*

⁵¹⁷Law 12522 defines the special protected areas of springs and its surrounding vegetation. *Lei n° 12.522 de 15 de Dezembro de 1995, publicada no Diario Oficial do Estado n° 16.702 (Parte I), pg 01, de 28/12/95.*

⁵¹⁸Law 12664 regulates the State Funding of Water Resources, *Lei n° 12.664, de 30 de Dezembro de 1996, publicada no Diario Oficial n° 16.952 (Partel), pg 6, de 30/12/96.*

⁵¹⁹Brazilian Federal Constitution, *supra* note 150.

⁵²⁰Water Code, *supra* note 478.

⁵²¹Law 9433/97, *supra* note 18.

⁵²²*Lei N° 6.938, de 31 de Agosto de 1981.*

11996 92⁵²⁴ and Decree 23067/94,⁵²⁵ regulating any award of water uses.

The Secretariat of Water Resources (*SRH- Secretaria de Recursos Hidricos*) is the authorised agency for allocating water in Ceara, but it has the technical support of the Resources Management Company (*COGERH- Companhia de Gestao de Recursos Hidricos*)⁵²⁶ and other governmental agencies such as the Ceara Foundation of Meteorology and Water Resources (*FUNCEME-Fundacao Cearense de Meteorologia e Recursos Hidricos*).⁵²⁷

Like the legal nature of Manitoba water rights, Ceara water rights are mere administrative authorisations to use water. Ceara water awards can have characteristics of either an act or a contract, as explained above. That is, water rights can be granted by an administrative contract in the

⁵²³As pointed out except for some Ceara waters that are stored in dams and reservoirs, which are under federal government control according to Article 26, § 1 of Federal Constitution, *supra* note 150. In addition, the only federal water in Ceara is the Poti river basin, which extends to another state. No major river is federal in Ceara state.

⁵²⁴Law 11996/92, *supra* note 508.

⁵²⁵Decree 23067/94, *supra* note 509.

⁵²⁶The COGERH acts as a technical agency for the whole state of Ceara. However, each basin also has basin committees to be formed by the stakeholders which will hold discussions concerning the allocation of the resource as well as tariffs, besides the separate basin agencies under the supervision of COGERH. The Ceara Law 12217/93 creates and regulates the COGERH. As pointed out above, the Secretariat of Water Resources will be the issuing organ for cessoes (cessoes), concessions (concessoes), Ceara Water Resources Secretariat (SRH).

⁵²⁷Ceara water resource management is based on the so-called Integrated Water Resources Management System (SIGERH-Sistema Integrado Gerenciamento Recursos Hidricos), which is basically the Ceara Water Resources Secretariat (SRH). It manages water resources with the assistance of other governmental agencies: Resources Management Company (COGERH-Companhia de Gestao de Recursos Hidricos), Foundation of Meteorology and Water Resources (FUNCEME-Fundacao Cearense de Meteorologia e Recursos Hidricos), and Superindence of Hydraulic Buildings (SOHIDRA-Superintendencia de Obras Hidricas). Currently, there are four branches where it is possible to apply for a water award in Ceara state. SRH(Fortaleza), and three branches of COGERH (Fortaleza, Limociro do Norte, and Pentecoste). SRH, *supra* note 509.

Ceara system. However, it is not a property right at all. Both the federal and the Ceara water laws explicitly establish that the award for water use in no way implies the alienation of the water itself, which is inalienable; it merely awards the right to use it.⁵²⁸

The use of water, which is a public common property, requires allowance of a public interest or a specific exploitation. In this case, permission or concession are the administrative “authorisations” that can allow water to be used for, respectively, public interest and specific purpose.⁵²⁹ The federal water law does not specify what kind of administrative authorisation is required to allow water usage when it regulates a water permission system, it only says that a water use requires a governmental award.⁵³⁰ The water code, another federal law, establishes

⁵²⁸ Article 18 of Law 9433/97, *supra* note 18. and Article 26 of Ceara Decree 23067/94, *supra* note 509.

⁵²⁹ In Brazil, the general use of natural resources can be allowed by authorisations of use. Policy controls under any activity related to natural resources are through *authorisation*, *permission* or *concession of use*. *Authorisation of use* is an administrative act, unilateral (one-sided), discretionary, precarious, by which the Public Power allows a citizen use of the public property with exclusivity. *Permission of use* is an administrative act, unilateral, discretionary, precarious, free or onerous, by which the Public Power authorises a private utilisation of public property for public interests and purposes. *Concession of use* is an administrative agreement by which the Public Power authorises exclusive utilisation of a public property for exploitation according to a specific purpose. In conclusion, the general use of natural resources can be allowed by authorisations of use. In other words, an authorisation is granted for use of water for private benefits, while permission and concession for public benefits. My explanations are based on the basic theory of administrative law. For additional analyses of Brazilian doctrine of administrative law, see: Ely Lopes Meirelles, *Direito Administrativo Brasileiro*, 20^a ed. (Sao Paulo: Malheiros Editores, 1990); Maria Sylvia Zanella Di Pietro, *Direito Administrativo*, 8^a ed. (Sao Paulo: Editora Atlas, 1993); and Vladimir Passos De Freitas, *Direito Administrativo e Meio Ambiente*, *supra* note 198.

⁵³⁰ Law 9433/97, Art. 12, *supra* note 18. Rights to the following water uses are subject to Government award: -The diversion or impoundment of water from a body of water for final consumption, including public water supply or use in a production process. -The extraction of water from subterranean aquifers for final consumption or for use in a production process -The discharge of treated or untreated sewage and other liquid or

that concession and authorisation are the only administrative mechanisms to award water uses.⁵³¹ Ceara's system partially follows this federal model. It establishes different forms for water awards, which are granted by cession (*cessao*), authorisation (*autorizacao*) and concession (*concessao*) of use.⁵³² Commenting on Ceara water rules, Cid Tomanik points out that the state should follow the water code award forms, authorisation or concession. In fact the Brazilian constitution grants jurisdiction to the federal government to establish general rules of water awards.⁵³³

As in the Manitoba system, Ceara water allocation is the process that permits some action or action by some people and restricts other actions or actions by some others. In Ceara, except for water uses of less

gaseous waste into a body of water with a view to diluting, transporting, or disposing of it; -The utilization of hydroelectric potential; -Other uses that affect the flow, quantity, or quality of water existing in a body of water.1.) The following, as defined in the regulations, do not require Government award: -The use of water resources to meet the needs of small population groups scattered in rural areas; -Diversion, catchments, or discharges that are considered insignificant; -Impoundments of volumes of water that are considered insignificant.2. The award and utilization of water resources for the generation of electric power shall be provided for the National Water Resources Plan, as approved in the manner set forth in paragraph VIII, Art. 35, of the present Law, subject to compliance with the legislation of the specific sector.

⁵³¹ Article 43 of Water Code, *supra* note 478.

⁵³² Article 17 of Decree 23067/94, *supra* note 509 (Art. 17. Para fins deste Regulamento a outorga pode constituir-se de: 1-cessao de uso, a titulo gratuito ou oneroso, sempre que o usuario seja orgao ou entidade publica; 2-autorizacao de uso, consistente na outorga passada em carater unilateral precario conferindo ao particular, pessoa fisica ou juridica, o direito de uso de determinada quantidade e qualidade de agua, sob condicoes explicitadas; 3-concessao de uso, consistente na outorga de carater contratual, permanente e privativo, de uma parcela de recursos hidricos a que o particular pessoa fisica ou juridica, dela faca uso ou explore segundo sua destinacao e condicoes especificas. Paragrafo Unico- Enquanto nao forem conhecidas e seguramente dimensionadas as disponibilidades hidricas, serao outorgadas apenas autorizacoes de uso ao particular).

⁵³³ Cid Tomanik, *supra* note 65, at 626, translation by Sandra Cilce De Aquino. He refers to Article 21, XIX of Federal Constitution, *supra* note 150.

than 2,000 litres/hour,⁵³⁴ a valid and subsisting water award is required for any other water uses. Moreover, Article 17 of the complementary decree establishes:⁵³⁵

Cessao is granted to public users. An *autorizacao* is granted for private water use. It specifies the right to use a determined quantity and quality of water and is valid for ten years before it has to be renewed. *Autorization* is granted unilaterally by the SRH and can be revoked, while a *concessao* is a permanent and individual water right granted on a contractual basis. The law stipulates, however, that as long as the availability of the resource is not well established, which currently is the case, only *autorizacoes* will be granted.⁵³⁶

The SRH is in charge of managing the bundle of water rights and duties through these different administrative licences, cession (*cessao*), authorisation (*autorizacao*), and concession (*concessao*). The right to use water is issued in personal terms without any flexibility for voluntary transfer, according to Article 13 of the Ceara rules.⁵³⁷ Like Manitoba, the Ceara system does not present many ways of transferring water rights. In contrast to Manitoba, water rights in Ceara are not tied to the land or undertaking but to the holders, in a personal character. Moreover, none of the Ceara water administrative authorisations can be sold or transferred. Thus, as in Manitoba, there is a lack of flexibility to manage reallocation of

⁵³⁴Hypothesis of water uses that are collected directly from the sources, surface or underground, and whose consumptions do not exceed such amounts, Article 8 of Decree 23067, *supra* note 509.

⁵³⁵*Ibid.*

⁵³⁶Kemper, *supra* note 1, at 120.

⁵³⁷Decree 23067/94, *supra* note 509.

water rights among the users, resulting in similar conflicts among water users.

In addition, the distinction in these administrative licenses has significant legal effects. An authorisation and cession are administrative acts, while concession is a "**contract**". In Brazilian Administrative Law, there is a legal distinction between the concept and the effects of "**an administrative act**" and "**an administrative contract**". An administrative act is a unilateral, precarious and discretionary act. It can be revoked any time without compensation if based on public convenience.⁵³⁸ On the other hand, an administrative **contract** is a bilateral act which involves the Public Power and a citizen, and whose precariousness is not absolute.⁵³⁹ The legal issue here regards the "security" which these different administrative authorisations, an act or a contract, give for the water users.

Certainly, water rights granted by an administrative contract give to water users more security than those by an administrative act. Although this administrative contract differs from a private contract in terms of security, it can be extinguished in some situations. An administrative

⁵³⁸It is an act based on public law and practised by public administration, which seeks to produce legal effects with public purposes. Administrative acts are different from "acts of the administration" that are "material activity" practiced in the exercise of management, Jose dos Santos Carvalho Filho, *Manual de Direito Administrativo* (Rio de Janeiro: Freitas Bastos Editora, 1997), at 59 [translation by Sandra Cilce De Aquino].

⁵³⁹It is an agreement established between the Public Administration and the citizen whose object is an activity in favor of the public interest, which is based on public law. Carvalho, at 116, *ibid.* It is a "specie" of the gender "contracts of the administration". Contracts of the administration include both public contracts which are regulated by Public Law and private contracts which are regulated by Civil or Commercial laws, such as private purchases and sales. These legal regimes use the difference between private

contract is based on the public interest principle, where the public interest has to prevail. Any administrative contract has to represent fixed terms and conditions of use that favor public interests. Otherwise, any citizen can appeal to have this administrative agreement revoked. As a result, the conditions under which it can be revoked are very limited.⁵⁴⁰ For instance, pollution or salinization from any water transfers. Another example in which an award can be extinguished is when the use of water is considered inappropriate by criteria of the Secretariat of Water Resources or other qualified entity.⁵⁴¹ This is a wide discretion. Depending on who is in political power, this discretion can be exercised in a flexible way to allocate water for the best use of the community, while creating insecurity to private water users. In Manitoba the discretion of the administrator to issue and to impose conditions on licenses is more restricted by statute, while the Ceara system offers a wider discretion. Article 21, item VII of Decree 23.067⁵⁴² is explicitly permissive in terms of what the administrative agency “may” do. An example of this free selection of criteria and choices is the *Canal do Trabalhador* construction in Ceara in 1993. When water had almost run out, the government built this canal “by diverting water from the Jaguaribe basin and leading it to the *System Pacoti-Riachao-Gaviao*. The canal was built under protest from the water users in the Jaguaribe

and public contracts in their administration. at 115, *ibid.* [translated by Sandra Cilce De Aquino].

⁵⁴⁰ Article 21, item IV, Decree 23067/94. *supra* note 509.

⁵⁴¹ *Ibid.*, Article 21, item VII.

⁵⁴² *Ibid.*

basin who were afraid that the diversion would lead to supply problems for them.⁵⁴³ In fact, the *System Pacoti-Riachao-Gaviao* supplies the city of Fortaleza, the capital of Ceara. Certainly it is more politically agreeable to supply water to the city than to enforce management mechanisms for reducing demand.⁵⁴⁴ What was not considered was “that the water led from the Jaguaribe to the capital was in fact water which otherwise would have been used by the people in the Jaguaribe valley and thus constituted an intersectoral reallocation without compensation for the losers.”⁵⁴⁵

Thus, wide discretion in a water management system may result in decisions like this, where water resources were not equally distributed among users in the Jaguaribe valley and the city of Fortaleza and exacerbated to water conflicts between the two regions. What will the new supply for Jaguaribe valley be? As explained,⁵⁴⁶ the security of water rights may or may not contribute to the supply of water, since it induces more water uses instead of guaranteeing future supplies. Perhaps because a concession (*concessao*) is more secure, Ceara’s water law establishes that as long as the availability of water is not well known, the water licensing department can only issue an authorisation.⁵⁴⁷

⁵⁴³Kemper. *supra* note 1. at 109.

⁵⁴⁴Regarding this political appeal, Kemper points out a book about this canal, presenting the then governor Ciro Gomes as a hero, *O homem que fez um rio* (‘The Man Who Made a River’): published and freely distributed in Ceara in 1993, *ibid*.

⁵⁴⁵*Ibid*.

⁵⁴⁶Previous section about Manitoba water allocation system.

⁵⁴⁷Article 17. Paragrafo Unico. Decree 23067/94, *supra* note 509.

This legal mechanism focuses on the supply side, while the allocation should focus on the management of existing water resources. In the context of this supply-based approach, an engineering mechanical solution, such as BWR by canals with storage systems, has been allowed. The “supply based approach has proven only partly successful.”⁵⁴⁸ Moreover, this discretion to choose authorisation instead of concession liberates the state of future compensations for breaking a contract. Unfortunately, governments are starting to be aware of their administrative liability in managing the environment and try to escape from compensation or any other claims. According to Markus Buchart in 1991 a Manitoba Department of Justice lawyer “advised the Department not to draft laws which could make the Province liable for not enforcing them”⁵⁴⁹ The lawyer stressed Manitoba’s vulnerability to finding itself liable for non-enforcement of its laws and regulations, especially environmental ones. Hence, like the Manitoba water allocation system, the Ceara system may have neither security enough for well-defined water rights nor flexibility enough for adaptation for water supply changes. In this inflexible and insecure legal context, a permission for water transfers, any inter-basin transfers or large-scale projects, is vulnerable, even in Ceara where water resources are scarce. Ceara is more likely to import BWR than to export it.

⁵⁴⁸ Kemper, *supra* note 1, at 105.

⁵⁴⁹ Markus Buchart. “Laws that can’t be broken: Environment Department told they’re the best kind”. *Links Magazine*, Fall 1995, at 11. Buchart is a former Manitoba Department of Environment official and presently a Winnipeg lawyer.

However, water conflicts may be experienced by both exporting and importing parties.

In Manitoba the prior allocation theory has not allowed flexibility for an equal distribution of water resources and rights among users. Different from, but not better than, Manitoban temporal priorities, Ceara's approach to solving conflicts in shortages is also not efficient, due to its wide discretion and insecurity in its grant of water rights to users. There appears to be a mixture of criteria among **share supply**, **priority order**, **seniority** and **social interest approaches**, according to Article 16 of Decree 23067. This article establishes that if there are too many applications in relation to the quantity of water available, the Secretariat of Water Resources (SRH) should always, when it is possible, apply a **share supply** criterion, although it has to obey the **order of priority** established by Article 15. Article 15 of Decree 23067 establishes an enumerated escort list for SRH to allocate water resources. The first priority is to domestic water supply users, which is understood as specific services different from uses of water more than 2,000 liters/hour.⁵⁵⁰ Then, different from Manitoban priorities, in Ceara industry, business, and service uses have priority over agricultural uses, including irrigation, cattle raising, pisciculture. That is presumably because Ceara's outgrowth plans have been focusing on the development of industry and tourism on the coast instead of for rural areas. However, if the competition lasts between water

uses with the same priority order, SRH can decide in favour of those who already have a license (**seniority**), although always taking into account the established priority list. If the impasse persists, SRH can decide in favour of the applicant whose water use will be most in the '**social interest**'.

In Manitoba, conciliating the prior allocation system and the table of priorities is a major focus of its water allocation system; but in Ceara the conciliation of its four distinct approaches appears to be a Herculean task, due to the existing discretion and the political interests that it may involve. How can these four approaches be properly applied? What is the extent of discretion to decide to shift from one approach to another? The law only establishes and orders the criteria as legal 'formula', which administrators may apply according to their selection. Thus, this allocation mechanism is an administrative authority based on broad discretion. Water users whose applications are denied can appeal to the State Council for Water Resources (*CONERH- Conselho Estadual de Recursos Hidricos*) within five days after they have knowledge of the decision.⁵⁵¹ Different from the Manitoba licencing procedures, Ceara water law establishes a deadline for decision making in a water award, which is sixty days; but this term can be suspended if necessary.⁵⁵² The deadline may avoid an extensive backlog of applications, as currently exists in Manitoba.

⁵⁵⁰Hypothesis of Article 8, *ibid.*, except for a water award, as explained earlier.

⁵⁵¹Article 14 of Decree 23067, *supra* note 509. [interpretation and translation by Sandra Cilce De Aquino]

⁵⁵²Articles 11 and 12 of Decree 23067, *ibid.*

In Ceara, besides wide discretion for allocating water resources and rights, water rights are statutory permissions. Like Manitoba, water rights are neither a private contract nor a property but merely an administrative authorisation (act or contract) which must protect the public interest. An administrative authorisation, cession (*cessao*), authorisation (*autorizacao*), or concession (*concessao*) only allows the “right to use” water. Such right can be limited, suspended or extinguished,⁵⁵³ but none of these water awards can be sold or transferred. This lack of flexibility may result in consequences similar to those in Manitoba: potential needs for BWR are in front of shortage and water conflicts among users. In Ceara conflicts among users may become more intense because there may be both a lack of water resources (physically) and of water rights (legally), if discretion in allocating water is not wisely applied. Ceara’s water system, at least theoretically, is a bit more flexible than Manitoba’s for allocating water resources and rights. It foresees the multiple uses approach, a water information system, and pricing mechanisms that may alleviate scarcity problems and the need for BWR, as explained in the next sections.

2.3. Multiple Use Purposes, Scarcity and BWR in the Licensing System

Unlike Manitoba, Ceara establishes multiple uses as a legal water policy mechanism, which is a requirement for any awarding of rights to

⁵⁵³ Articles 20 and 21 of Decree 23067. previously explained.

water.⁵⁵⁴ Multiple uses grant, theoretically, the utilisation of water with different purposes at the same time, promoting harmony among these distinct uses of water. The Ceara law also establishes that irrigation as well as energy production has to be developed in harmony with water resources policy and with rational uses for maintaining the environmental preservation aspects.⁵⁵⁵ Thus, in practice, the multiple uses approach may contribute to reducing the scarcity of water and increasing productivity. Furthermore, it has to be factored into the evaluation of BWR environmental damage and its social costs, even though Ceara is considered a potential receiver of water. Water transfers may affect the multiple uses in the both source where water is taken out and in the destination where it is put in. Water uses from a water source can be granted for irrigation, fish habit, navigation, conservation, and so on. How would Ceara's fishing habitat be affected by receiving water from a BWR? Is there risk of receiving exotic species that may affect Ceara's aquatic ecosystem? How might new supplies of water from a BWR affect Ceara's multiple uses of water?

⁵⁵⁴ Article 326, item II, § 1 of Ceara State Constitution 1989, *supra* note 507; Article 2, item I (d) of Lei 11 996/92, *supra* note 508; Article 4, item VI of Decree 23067/94, *supra* note 509. Also in federal water law, Article 13 of Law 9433/97, *supra* note 18: "the award of rights to water shall maintain its multiple use."

⁵⁵⁵ *Ceara State Constitution 1989*, Article 268 ("A irrigacao devera ser desenvolvida em harmonia com a politica de recursos hidricos e com o programa de conservacao do solo e da agua"); and Article 269("Na formulacao de sua politica energetica o Estado dara especial enfase aos aspectos de preservacao do meio ambiente, utilidade social e uso racional dos recursos disponiveis"), *supra* note 507. Ceara Law 11996/92, Article 3, item III, *supra* note 508.

In Manitoba, the prior allocation approach affects any multiple uses approach by being contradictory to equality among users. Although a prior allocation is not the only criterion for allocating water resources in Ceara, it is optional for solving water conflicts when scarcity occurs. If this option is applied in Ceara, it can have the same effect as it does in the Manitoba system: unequal opportunities for new water users. In this case, the multiple use practices in Ceara depend on the discretion of the administrator. A similar problem to Manitoba's preference for older users may occur when the Ceara administrator privileges the seniority criterion.⁵⁵⁶ That apparently contradicts the multiple uses approach established by Ceara's water law. Both Manitoba and Ceara have a similar defect: limited mechanisms for transferring water rights.⁵⁵⁷ So, although multiple uses are legally guaranteed in Ceara, in practice they may depend exclusively on administrative allocation without public participation. If the multiple uses approach is put aside by administrative discretion, this may not contribute to a reasonable water allocation. In addition, any BWR case without multiple use consideration and the evaluation of social and environmental realities may result in water quantity and quality damages.

Thus, in Ceara the efficiency of water management is at the discretion of the administrator for allocating resources and rights.

⁵⁵⁶Decree 23067/94, Article 16. *supra* note 509. See also the priorities of Article 15. *ibid.*

⁵⁵⁷Article 21, extinction; Article 20 suspension. In fact according to Article 13 rights to use water are awarded personally and are non-transferable. However, extinctions and

Differently from Manitoba, Ceara's mixture of criteria for solving conflicts in shortage times may create new water conflicts if the basic purposes of multiple uses are not applied. If such discretion is applied to fulfil political interests, instead of reasonable allocation purposes, the effect on water management can be harmful. This discretion in Ceara may or may not be broadly applied for water conservation purposes. This shows how political water allocation can be and that "public interest" in water management is not a legally tight definition. Furthermore, if the multiple use approach implies prevention and sustainability, the community has to be involved in any water transfers and has to have the opportunity to question: water resource transfers for whom? For what? And when? For the needs of the next generation? What needs? In which future — short, medium or long term? Do water transfers such as BWR, even for a receiver region, admit multiple uses? Can any Ceara inter-basin water transfer, whether small medium or large-scale, achieve multiple uses for Ceara's water resources? Do water transfers mean reduction of resources and rights for other users or losses of any potential water utilisation? Are there losses of rights or opportunities? Who are the losers? Who will bear these losses?

In practice the Ceara water system is not totally free of inappropriate or inefficient water allocation, especially because the discretion established by the law can be broadly applied. The history of

suspension of a water award make resources and rights available to be transferred but do not directly transfer them.

Brazilian Northeast politics has shown some abuses of discretionary power. A water policy based exclusively on a public administrative model can fail to achieve efficiency and equality in water uses, when lacking public participation. On the other hand, market mechanisms themselves cannot guarantee efficiency and equality in water uses. Moreover, a water allocation system requires participation of major parties: water users and stakeholders. Ceara's multiple uses may be a potent approach in water utilisation and may contribute to solving scarcity problems only if, in practice, its water allocation system grants equal opportunities among its users.

2.4. Water Information System and BWR

Although the Ceara state water law does not regulate the water resources information system, it has been used as a water policy mechanism. A water information system is "a system for the collection, processing, storage, and retrieval of information on water resources and the factors involved in their management."⁵⁵⁸ Thus, not only water resource information, such as the volume of water in river basins,⁵⁵⁹ but also water uses, purposes and other factors are included in Ceara's database. Regarding water uses, irrigation can be searched by hydrographic regions,

⁵⁵⁸ Article 25 of Law 9433/97, *supra* note 18. This federal law includes this mechanism in the national water policy; see also Article 5, item VI; Articles 26 and 27.

⁵⁵⁹ Information about the present volume of water in weirs in river basins was last update in 1 June, 2001 on line COGERH, Monitoramento http://www.cogerh.com.br/monit/boletim/boletimprt.asp?cod_bacia (last up-date 1/6/2001).

by administrative regions or by a Municipality;⁵⁶⁰ licences by the kind of use or waterwork or by the number of licences processed. All information is available on-line in an electronic atlas of water resources and meteorology.⁵⁶¹ Although not all Ceara water data are implemented and up-dated, part of this information system has been used as a basis for water allocation. Ceara has used an integrated resource system to achieve regular up dating and to reduce maintenance costs. The following sources feed its data base: the Ceara Secretarial of Water Resources (*SRH-Secretaria de Recursos Hidricos*), Ceara Resources Management Company (*COGERH-Companhia de Gestao de Recursos Hidricos*), Ceara Foundation of Meteorology and Water Resources (*FUNCEME-Fundacao Cearense de Meteorologia e Recursos Hidricos*), Ceara Agricultural Irrigation Secretarial (*SEAGRI-Secretaria da Agricultura Irrigada*), Ceara Mining Resources Researching Company (*CPRM-Companhia de Pesquisa de Recursos Minerais*), Ceara Planning Institute Foundation (*IPLANCE-Fundacao Instituto de Planejamento*), Ceara Superintendence of Hydraulic Buildings (*SOHIDRA-Superintendencia de Obras Hidraulicas*) and

⁵⁶⁰ *Ibid.*

⁵⁶¹ This electronic atlas is a project started in December 1998, which experimental stage was done in October 1999. This project was financed by Interamerican Development Bank. (O desenvolvimento desta versão eletrônica do Atlas foi iniciada em Dezembro de 1998 e concluído, em fase experimental, em Outubro de 1999. Este projeto foi financiado com recursos oriundos do Acordo de Empréstimo 4190-BR BIRD/Governo do Estado do Ceará - Contrato 019/PROGERIRH/CE/SRH/98-Piloto) on line Atlas Eletrônico dos Recursos Hídricos e Meteorológicos do Ceará on line <<http://atlas.srh.ce.gov.br/index.asp>>

Brazilian Geography and Statistic Institute (*IBGE-Instituto Brasileiro de Geografia e Estatística*).⁵⁶²

Water information is vital to water allocation, to addressing scarcity problems and to water transfer issues because it can offer different alternatives with negative and positive effects, which can be used in the process of decision making. Water allocation systems depend on not only water information but also other policy tools such as the pricing system. The enforcement and monitoring of licences is more efficient if it is based on reliable water data. Considering seasonal shortages, Ceara has established and linked this technical tool to support the SRH in the licensing process. This system aims to identify where water resources have been intensively used, for which purposes water has been most used, where more monitoring and enforcement is necessary, where and when there are risks of scarcity, and so on. In other words, water information is supposed to guide the planning and management of water resources by identifying water availability, surpluses or lack of resources. Currently, the Ceara water information system is available on-line in its electronic atlas of water resources and meteorology.⁵⁶³ Theoretically, these data may give the users a sense of security about the availability of water resources and help to achieve an equal distribution. How should one best use such information?

⁵⁶²Atlas Eletronico, *ibid.* See paper from a conference, See also Setima Mesa: "Politica De Informacoes na Gestao dos Recursos Hidricos do Ceara", *V Seminario Internacional de Gestao de Aguas: Convivencia com a Seca- Experiencia do Semi-Arido no Planeta Terra*. Fortaleza, Ceara, Brasil, 20 a 22 de Outubro, 1999, Ceara Water Resources Secretariat. *supra* note 509.

Is water information accessible in an efficient manner? An information system has to be efficient, from the collection of data to its accessibility, including the ways of communicating information to the public. As noted, an information system involves technical and social research plus public involvement. Are people well informed in a region where there are high poverty and low education levels? How many water users have access to a computer? How is information divulged to the public? How are water users supplied with this information?

Information related to water transfers such as BWR requires communication and feedback. Community (local) knowledge and human resource skills need to be combined with technological information. Thus, a reasonable management infrastructure is needed to collect and spread water information. Considering the hardship that scarcity creates on one side and the potential social, economic and ecological costs of a BWR project on the other, the community depends on reliable water information to decide which are the worst and the best water allocation options.

Furthermore, because the public is active in decisions about water allocation, they are also responsible for any future problems with water availability. Thus, the community must take part in the solution of water problems and conflicts. In Ceara, this public participation in the information system has occurred through water user committees. That sounds like a reasonable practice for good communication between government and the

⁵⁶³*Supra* note 561.

public. However, only a few water user committees have been implemented to date, in Curu, Baixo Jaguaribe and Médio Jaguaribe.⁵⁶⁴ There is a need to universalise this kind of participation in all state water basins. Another worry about the efficiency of water use committees in Ceara and other parts of Brazil is related to the socio-economic conditions of the people. Poverty and illiteracy can be an obstacle to any realistic participation in the decision making process. Social, economic and political differences can play in favour of those who are more qualified and skilled. In a conference about the information policy for water resource management in Ceara, Mansove Elias pointed out these differences. As a result, the Sub-Secretary of Water Resources of Ceara, Benedito Ferreira de Oliveira, has argued that the solution is for more public involvement.⁵⁶⁵ Such a system with public participation through water use committees in Manitoba or any other Canadian province would have more efficiency because of the higher level of education and politicisation of Canadians. If it were to occur in Manitoba, water allocation would be more realistic to the needs of people who would also be responsible for mistakes.

There is no perfect mechanism in water policy for allocating water resources. However, if the Ceara water information system remains up to date and open to the people, it can contribute to assessing real needs for

⁵⁶⁴ COGERH www.srh.ce.gov.br/frame-institutional.htm, item Users Organization, COGERH, Organizacao dos Usuarios, <<http://www.cogerh.com.br/gestao.asp?page=organiz>>

⁵⁶⁵ "Politica De Informacoes na Gestao dos Recursos Hidricos do Ceara". *supra* note 562.

water, to creating incentives for water conservation, and to avoiding improper small inter-state water transfer projects.

2.5. Pricing and BWR

In contrast to Manitoba water legislation, Ceara's legal system establishes a pricing mechanism for water uses as a water policy tool.⁵⁶⁶ In fact, the Brazilian water system as a whole has such a pricing mechanism.⁵⁶⁷ The states have to follow the national water policy base, recognising the economic value of water and charging for it.

According to the Ceara Resources Management Company (*COGERH-Companhia de Gestao de Recursos Hidricos*), the major reasons for establishing water fees are: 1) to reduce wastage of water; 2) to increase efficiency in water uses; and 3) to raise revenue for financing management, operations, and maintenance of hydraulic buildings.⁵⁶⁸ In Ceara, a bulk water tariff system is already in place to enable the COGERH "to establish an appropriate tariff structure, an initial tariff level, and a timetable for increased tariffs to gradually achieve cost recovery of operation and maintenance and some investments in new water storage and

⁵⁶⁶Ceara water legislation regarding pricing : Article 7 and 8 of *Law 11.996/92*, *supra* note 508, and its regulatory decrees, *Decree 24.264/96*, *supra* note 511, and *Decree 24.870/98*, *supra* note 512.

⁵⁶⁷Article 5, item IV, and articles from 19 to 22, *Law 9433/97*, *supra* note 18. Furthermore, Article 22 establishes that this money is designated to be spent only on river basin projects, *supra* note 18. "The establishment of bulk water tariffs is currently one of the most emphasized pricing mechanisms in Brazil. The actual implementation of bulk water supply tariffs is rapidly taking form in many states. Studies are being carried out around the country...". *Musa Asad et al*, *supra* note 6, at 18. Some of the representative cases are : State of Ceara, State of Sao Paulo, State of Rio Grande do Sul, and State of Bahia.

conveyance infrastructure.”⁵⁶⁹ Although this pricing mechanism has been recently established and still not fully implemented, the COGERH has charged fees since November 1996.⁵⁷⁰ Fees shall be charged for the use of water resources vested in the state, surface and groundwater, subject to any award: industrial uses, potable concessions, and waters that are pumped and canalled to distributors.⁵⁷¹ Currently, fees for irrigation have been examined, and only industrial users and sanitation companies have been charged.⁵⁷² “Industrial sector revenue is about 65 percent of total revenue, compared to a domestic consumption share of less than five percent.”⁵⁷³

⁵⁶⁸COGERH. Gestao de Aguas. Cobranca peio Uso da Agua Bruta on line www.cogerh.com.br/gestao2.asp?page=cobranca [translate by Sandra Cilce De Aquino].

⁵⁶⁹Musa Asad *et al.* *supra* note 6. at 18.

⁵⁷⁰Article 1 of Ceara Decree 24264/96. *supra* note 511. Moreover, in the federal law, Article 20 of Law 9433/97 establishes that fees shall be charged for the use of water resources, subject to awards under the terms of its Article 12, which regulates the water uses that are pre-conditions for any governmental award. Article 5 of this same law, establishes fees for the use of water resources as one instrument of the National Water Resources Policy, *supra* note 18. Therefore, the principles of user-pay and polluter-pay are ensured here. A polluter is compelled to correct or clean up the environment, according to the National Environmental Policy Law, Law 6938/81, Article 4. see Fiorillo, *supra* note 59, *Legislacao Aplicavel* at 449. Law 9433/97 specifically requires award and payment for the discharge of treated or untreated sewage and other liquid or gaseous wastes into a body of water that is done with a view to diluting, transporting, or disposing of it (Article 12, III). Besides Law 9433/97, *supra* note 18, Brazil has other relevant federal law: for example, the Law 6.938/81 establishes the “rational” use of water (article 2, II), *supra* note 59. [Translation by Sandra Cilce De Aquino].

⁵⁷¹*Ceara Decree 24264/96, ibid.*, Article 3. The money from water fees is transferred to the Ceara State Funding of Water Resources (Fundo Estadual de Recursos Hidricos-FERH) that is supposed to manage and apply this money, Article 2, item II of Law 12664/96, *supra* note 592. This law regulates this funding. The Ceara water fee policy directions follow the national water police rules, which establish water fees, the water funding and how this money has to be spent: Law 9433/97, respectively, Article 1º, item II, Article 19, and Article 22, *supra* note 18.

⁵⁷²Ceara Companhia de Gestao dos Recursos Hidricos- COGERH (Corporate of Water Resources Management), *cobranca pelo uso da agua bruta*, on line <www.cogerh.com.br/gestao2.asp?page=cobranca> [translation by Sandra Cilce De Aquino].

⁵⁷³Musa Asad *et al.* *supra* note 6. at 20.

A preliminary study was carried out for implementing the COGERH water pricing strategic plan. “The study set US\$18/1,000 m³ as the initial unit price of bulk water. This value was chosen so that the increase in expenditure for a poor family living in an urban centre would not exceed approximately one percent of the family’s income, putting aside the effects of subsidies.”⁵⁷⁴ Bulk water tariffs are supposed to increase gradually and not surpass most users’ ability to pay.⁵⁷⁵ According to a World Bank paper:

COGERH is using pricing measures to adjust demand and gradually introduce water scarcity values to users. In doing so, its water pricing policy takes into account ability-to-pay criteria in which the industrial sector contributes with the major share of revenue, cross-subsidizing households and rural users to reach the revenue goal.⁵⁷⁶

Thus, pricing may be an incentive for guiding water resource allocation and use, while contributing to solving scarcity problems and needs for water transfers.

Ceara’s water pricing system appears to be “exclusively” centralised on COGERH decision-making, while water rules foresee

⁵⁷⁴*Ibid.*, at 19.

⁵⁷⁵ Among the assumptions of the COGERH’S study strategy, mentioned earlier, “revenues would grow from zero in the first year, 1995, to US\$ 17.7 million in the tenth year, while the O&M costs would grow from US\$ 1.8 million in the first year to US\$ 6.5 million in the tenth year. After the tenth year there would be a steady financial flow. Its present value (discount rate of 8 percent) is very close to the present value of the US\$ 110.0 million water resource program launched in 1994, assuming that the investments are uniformly spread over a 10-year period. This attractive result is only possible because COGERH would not pay for past investments made by the federal and state government for water resources infrastructure”, *ibid.*, at 19.

⁵⁷⁶*Ibid.*, at 20.

community participation⁵⁷⁷ in the whole water resources management. Although COGERH has implemented educational programs in some Ceara water river basins (such as Curu, Alto, Medio and Baixo Jaguaribe, Banabuiu; Metropolitanas⁵⁷⁸), public participation should be strong in decision making related to water allocation, including the pricing system. On the other hand, a decentralised structure may be inefficient for Ceara's social, political, economical and physical conditions.

First, with public participation there is risk of manipulation of communities, water users association, river basin committees, and so on, considering Ceara's characteristics, as a state that has most of its population localised in its semi-arid northeast. This region "is characterized by the occurrence of periodic droughts and is the poorest region of the country and one of poorest in the world. Income and wealth are very unequally distributed and the quality of life of the majority of the population is very low."⁵⁷⁹ The illiteracy rate is high. Second, considering Ceara's "fragility of its water system in terms of severe water scarcity and

⁵⁷⁷ Article 1, item III. Article 2, item III (c). Article 24 of Ceara Law 11996/92. *supra* note 508. Ceara legislation foresees state water council with governmental and non-governmental representatives to dictate water policy and also water associations that may include industrial, urban, and other users or stakeholders to discuss and plan water supply and distribution criteria. Although COGERH has implemented educational programs for users and provided technical information and financed meetings to guide users, water allocation appears to be centrally an administrative decision-making process. The State Water Council, COGERH acts as an executive body of this council and as a basin agency for user associations. Thus, governmental interference is dominant. COGERH, Gestao dos RH, Organizacao dos Usuarios, on line <<http://www.cogerh.com.br/gestao.asp?page=organis>> In addition, the participatory water management is a principle established also by federal law, Law 9433/97, for the national water policy, *supra* note 18.

⁵⁷⁸ COGERH, Organizacao dos Usuarios, *ibid.*

reliance on integrated management of reservoir and conveyance system,” its institutional arrangements have still not been implemented.

Apart from these particular characteristics, its water pricing system appears to have a potential for success. Ceara has been identified as a pioneer in establishing and enforcing a water pricing system in Brazil.⁵⁸⁰ It has done so because water management is “paramount importance to overcoming the annual dry season and drought periods.”⁵⁸¹ since the state has no perennial rivers and there is a scarcity of water. Secondly, the state does not receive any legal financial payments from the energy sector, since its water availability does not allow hydro-energy production. Thirdly, the state reservoir system has not been successful in solving dramatic shortages during the drought seasons, so the state has had to make a massive investment because the federal government’s share is not enough to solve the scarcity problems. Also, the state has been promoting an aggressive program of industrialisation and coastal tourism, which require a reliable water supply. Lastly, the state can implement its own policies without waiting for federal regulation, since there is no major federal river in Ceara.⁵⁸²

However, Ceara’s law and policy lack certain criteria for achieving better environmental standards in water charges. For instance, fees for

⁵⁷⁹ Adelia de Melo Branco, “Women of the Drought: a Study of Employment. Mobilization and Change in Northeastern Brazil”, *supra* note 502. at 96.

⁵⁸⁰ Musa Asad *et al. supra* note 6. at 21.

⁵⁸¹ *Ibid.*

⁵⁸² *Ibid.*

water pollution can also sometimes in effect license water degradation, leading to water scarcity when it reduces clean water supplies.

The Ceara water system has a water pricing mechanism for water awards, but although this system has been implemented, few water users have actually been charged. As well, the pricing system appears to be centralised in the state agency with only limited public participation. Despite that, Ceara's water pricing appears to be better than the Manitoba mechanism, and it has guided water allocation and use, which may contribute to solving scarcity problems and any needs for water transfers.

2.6. Reservation of Water and BWR Issues

There are no reserved-water rules in the Ceara water framework established either by water law or policy. Thus, the Ceara system lacks this legal alternative that could be used for water conservation purposes.

Ceara can, however, enforce other environmental rules for achieving water conservation aims. At the state level, Law 10.147/77 regulates soil use for protection of water resources in the Metropolitan Region of Fortaleza, for instance, establishing protected areas that are under restriction for uses of their springs and other water sources.⁵⁸³ Also Ceara Law 12522/95 establishes as special protected areas the fountains (springs), bud sources, and their surrounding vegetation for water conservation purposes.⁵⁸⁴ At the federal level, the environmental national

⁵⁸³Law 10147/77, *supra* note 514.

⁵⁸⁴Law 12522/95, *supra* note 517.

policy law establishes the “rational” use of water, and the national forest code has indirect water protection because it establishes protection of forest and vegetation localised along rivers, bodies of water, lakes, lagoons, and reservoirs.⁵⁸⁵

Like discretionary power related to reservation of water in Manitoba, the utilisation of these Ceara environmental rules for water conservation depends on the political will of the government in power. Thus, legal mechanisms such as Manitoba’s reserved water disposition might also be applied for granting water supplies and for conservation purposes. This may reduce the needs for water transfers such as BWR.

2.7. Riparian Rights and BWR Issues

There are no riparian rights in Brazil, as there are in Canada. In the Canadian concept, a riparian owner has the right to receive water either unaltered in quality or undiminished in quantity. This means that there are no private water rights appurtenant to the land in Brazil.

However, as noted, historically landowners in northeast of Brazil have been freely exploiting water resources because of a lack of enforcement. In addition, these “private water practices” still make it difficult to implement the new view of water as a public property. Even though Brazil’s 1988 Constitution eliminated private waters, riparian customs remain in practice in, for instance, Ceara and other Brazilian

⁵⁸⁵Law 6.938/81, Article 2, II and Law 4771/65. *supra* note 59 [translation by Sandra Cilce De Aquino]

States in the Northeast. The absence or irregularity of rain is not the only problem.

The situation is aggravated by monopolization of ownership, concentrated access to and utilization of land (the concentration of land is higher year after year), and by the absence of an adequate agricultural policy to assure the commercialization of agricultural products. Thus, the drought stands as a socio-political problem more than anything. A regional oligarchy dominates the local political system, which leads to the appropriation of public benefits by a few. Corruption and patron-client types of relationships are part of the misery in the semi-arid region perpetuating ties of dependence between the local poor population and the large and powerful landholders.⁵⁸⁶

The historic socio-economic-politics of Ceara have been an informal obstacle for the implementation of the new mentality in using water in an equitable manner. In the common law of Manitoba, as well, riparian rights have been an obstacle to new water users. Any new extension of riparian rights must co-exist with the water licensing system, for protecting both water quality and quantity, and could be an incentive for enforcement of the water licenses. In Ceara, where political and economic power appear to be more concentrated, the landowners' prerogatives may prevail to exclude other more ordinary water users.

⁵⁸⁶Adelia de Melo Branco, "Women of the Drought: a Study of Employment, Mobilization and Change in Northeastern Brazil", *supra* note 502, at 97. See also Kemper, *supra* note 1, pages 107, 108, 117 and 127 for discussions about the landowner customs and the history of private-cooperative dams in Ceara.

2.8. BWR and Scarcity Problems

Unlike Manitoba, Ceara does not have explicit rules about BWR.⁵⁸⁷ Physically this state does not have enough water resources for BWR but Ceara is a potential receiver of large-scale water transfers.⁵⁸⁸ Probably any prohibition of BWR is out of the question in Ceara. As a result, several small and medium intra-state water transfers and other waterworks such as dams, and reservoir systems can be implemented. Is a water transfer a good mechanism for the scarcity problems in Ceara? The answer has been ambiguous because historically, water has not been made available to those who need it.⁵⁸⁹

Ceara can deny an *awārd* for any harmful BWR so as to protect the stream and flow of its waters,⁵⁹⁰ subject to the priorities for land use established in Water Resources Plans. It must respect the class to which the body of water has been assigned and, when applicable, the maintenance of conditions suitable for transport via an aqueduct,⁵⁹¹ and it shall maintain its multiple use approach.⁵⁹² So, even an intra-state water transfer can be

⁵⁸⁷ Actually, there are no BWR rules in the whole Brazilian water system, in both federal and state levels. However this prohibition can be implied as explained in this section.

⁵⁸⁸ As noted in previous chapter that comments the Sao Francisco River transfer. Ceara is one of the receiver states. Ceara climatic conditions makes water scarcity a strong concern, consequently requests for BWR are often presented as a solution for the shortages.

⁵⁸⁹ Private privileges and many deaths resulted at the time of Ceara's droughts. See indicated literature *supra* note 502.

⁵⁹⁰ Based on any use of water that affects the flow, quantity, or quality of water existing in a body of water use to alter flow; Ceara Law 11996/92, Article 4, *supra* note 508. Article 12, item V of federal Law 9433/97, *supra* note 18.

⁵⁹¹ Ceara Decree 23067/94, Article 4, *supra* note 509, and Article 13 of Law 9433/97, *supra* note 18.

⁵⁹² Ceara Decree 23067/94, Article 4, item VI, *supra* note 509, and Article 13, unique item of Law 9433/97, *supra* note 18.

denied based on these grounds. Bulk water removals are not specifically regulated in Ceara, but they can be prohibited if potential effects may endanger aquatic ecosystems based on the prevention principle. Water awards can also be suspended to preserve environmental quality, public interests, and navigable waters. In addition, BWRs potentially harmful effects risk damage that is contrary to collective interests. Thus, if a potentially harmful BWR can be avoided, the BWR prohibition may contribute to water conservation and alleviate shortages. Furthermore, in a federal BWR project such as the Sao Francisco river transposition or Ceara's small and medium intra-state water transfers, questions remain. How reliable are the environmental impact studies for allowing such water resource allocations? Is there equitable water resource distribution among all involved regions and users? For what purposes do water transfers occur — that is, are the water licenses for such water transfers allocating resources in an efficient and effective manner, to ensure the best use of water without damaging the environment? Regarding the federal water transfer plan, the Sao Francisco river transposition, that has been discussed in Brazil, Ceara, as a receiver of water resources, could benefit. Ceara does not have, as Manitoba does, interstate-jurisdiction issues related to an eventual BWR ⁵⁹³ because it does not have a major federal river crossing its state. Ceara also does not have international rivers and borders. Thus,

⁵⁹³However, the inter-jurisdictional issues is a reality for states with major federal rivers crossing their area and also where there is an international borders such as in Amazon states

there are no worries with international free trade and obligations related to water exports.⁵⁹⁴

⁵⁹⁴However, the potential Brazilian international BWR projects in states such as the states localised in the South of country, which are signatories of MERCOSUL, their situation is different from Canadian cases because Brazil does not assigned any international agreement that can impose "international water trade or exportation", as mentioned in Chapter two. The South America Free Treaty (MERCOSUL) that has been implemented does not have such power or open questions as NAFTA does.

CHAPTER SIX AN ALTERNATIVE INSTITUTIONAL ARRANGEMENT FOR WATER ALLOCATION SYSTEMS

BWR has been presented as a solution for new water supplies but a reasonable legal and institutional arrangement can contribute to a reduction of water scarcity problems. Perhaps the Canadian and Brazilian perceptions have been that both countries have an abundance of water resources, thus quantity has been considered less significant than quality in water management.

However, in reality, both countries have uneven water distribution and regions that are periodically affected by scarcity. Thus, water shortages should be considered more closely in connection with legal and institutional arrangements. Shortage is related not only to physical conditions but also institutional arrangements, because the water allocation system has been focused on the supply side while it should be focused on the demand side and incentives for water conservation. Semi-arid areas such as Ceara require specific water resource management and strategies different from hydraulic solutions such as BWR, dams, and reservoirs for allocating water. These mechanisms, which are supply-based approaches, have proven only partly successful for shortage problems. The *System Pacoti-Riachao-Gaviao* in Ceara, for example, supplied Fortaleza city but left the Jaguaribe valley without sufficient water. Manitoba and Ceara water management systems have problems in allocating water resources related to water rights, rights holders, flexibility, efficiency, and enforcement. In

their systems, water quantity aspects have been neither properly regulated by laws nor addressed by policies.

The aim of this chapter is to suggest an alternative institutional arrangement that may achieve more efficiency in using and allocating water resources. This chapter enumerates a few suggestions that can be applied in water allocation systems. An adaptative approach is needed for answering the demands of current and potential water users during any changes of water availability. Conditions for efficient water resources allocation are, at the minimum: 1) **well-defined water rights;**⁵⁹⁵ 2) **a participative and decentralised water management;** and, 3) **an integrated strategy.**

1) Well-defined Water Rights

The attention to water rights in water management has grown because of increasing scarcity and competition for water resources. Thus, well-defined water rights are required. Unfortunately, water resource management literature has taken a narrow view of water rights.⁵⁹⁶ In fact, it has been necessary to recognise a distinction between “rights to use water” and “access to water use,” which are respectively “legitimized use” and “mere access to water without a recognized claim.”⁵⁹⁷ Traditional legal systems have not satisfied the modern needs for water resources. Despite

⁵⁹⁵Kemper. *supra* note 1, at 42-45.

⁵⁹⁶Ruth Meinzen-Dick and Margaretha Bakler, *Water Rights and Multiple Water Uses: Framework and Application to Kirindi Oya Irrigation System, Sri Lanka*, Paper present at the 6th Biennial Meeting of the International Water Resource Economics Consortium, June 29-July 2, 1999, Hilton Waikoloa Village Hotel, Waikoloa, Hawaii, which is a Paper Discussion N° 59, International Food Policy Research Institute, at 3 (Washington, D.C.: Environment and Production Technology Division, 2000).

their differences, Manitoba and Ceara water allocation systems can both be classified as administrative models of allocating water resources. Potential water users have to apply to an administrative authority, which decides according to a set of legally and politically established criteria if the application will be issued or not. There is no space for negotiation. In both systems, if the application is denied, the applicant can appeal to the authorised governmental agency as a last resort. If the application is granted, licensees hold the authorisation for twenty years in Manitoba and thirty-five in Ceara before it has to be renewed.⁵⁹⁸ Furthermore, in both systems the right to use water is not a contract or property right but is a mere administrative authorisation that could be more flexible. Both Manitoba and Ceara water allocation systems are rarely adaptative to modern needs, including high demand, competition, and conflicts. There is not enough flexibility in Manitoba and Ceara for transferring water rights. Neither Manitoba's water licensings nor Ceara's water awards (*cessao*, *autorizacao* or *concessao*) can be sold or transferred. This limitation can stress shortage of water among users and create more water conflicts. The management of the bundle of water rights and duties through their administrative licensing systems is not efficient enough to reduce the shortage of water among users. In other words, the Manitoba and Ceara concepts of water rights and the way they are allocated do not grant both

⁵⁹⁷ Ruth Meinzen-Dick and Margaretha Bakker. *ibid.* , at 6.

⁵⁹⁸ Respectively, Section 5 (1) of Manitoba *Water Rights Act*, *supra* note 19, and Article 22 of Ceara Decree 25443/99. *supra* note 513.

water “rights” and “access” for new users. Third parties under both systems may bear unwanted costs in the allocation of water developments, which result in an unequal treatment between users. Reallocation is required but this is becoming more complex because the number of users without water rights is increasing.

The delineation of water rights is further complicated when we take into consideration multiple users (different villages, groups of farmers, fishermen, cattle owners, etc) as well multiple uses (irrigation, domestic, fishing, livestock, industries, etc.) of the resource.⁵⁹⁹ The strength of those rights — that is, the degree to which they can be defended — also affects water availability. Water supply and demand fluctuate. “Stronger water rights will apply even during periods of scarcity, dry seasons and drought years, while weaker rights may be denied when water is scarce.”⁶⁰⁰ Notwithstanding the framework of water rights legally established, there may be some water uses that are not recognized as legitimate by the law; for instance, fishing in reservoirs and tanks.⁶⁰¹ To deal with this complexity, it is necessary to look at the bundle of rights and various users that a water right concept can involve. Thus, water transfer⁶⁰² has to consider this complexity.

⁵⁹⁹Paraphased Ruth Meinzen-Dick and Margaretha Bakker . *supra* note 596. at 5.

⁶⁰⁰*Ibid.*, at 6.

⁶⁰¹ See this category in Kemper, *supra* note 1. Ruth Meinsen-Dick and Margaretha Baker have also illustrated some use as non-recognized by formal legal systems. see at 18 and 19. *supra* note 596.

⁶⁰²Recall that this refers to water right transfers in the sense of transferring rights from one user to another. see note 9.

Reallocation pressures result from “misfits between existing allocation institutions and new water demands”, and “water transfers are essential to the satisfaction of future needs as the list of legitimate stakeholders continues to expand.”⁶⁰³ A water rights concept has to be established in a way that facilitates water reallocation without excluding interested third parties. Water laws have provided no direct protection for third parties interests and environmental protection. However, claims are increasingly being asserted both through litigation and the political process.⁶⁰⁴ “In the future, it will be necessary to create processes that distinguish between good and bad transaction costs and promote beneficial transfers and discourage or prohibit those who impose high costs on legitimate third party interests.”⁶⁰⁵

As a result, water rights should be issued to a collective group (users), not property vestiges, transferable for conservational purposes (not for marketing) and proportional to actual stream flow, instead of being personalized, non-transferable, and absolutely quantified. Perhaps a classification of these bundles of rights should be in a hierarchy ranging from limited and short-term rights to the benefit of stream and collective water user interests. Costs and benefits of water developments should be born by all citizens as a mechanism for encouraging water conservation and

⁶⁰³Dan Tarlock, “Current Trends in United States Water Law and Policy: Private Property Rights, Public Interest Limitations and the Creation of Markets”, ed. Edward H.P. Brans *at al*, *The Scarcity of Water: Emerging Legal and Policy Responses* (London: Kluwer Law International, 1997), at 194.

⁶⁰⁴Paraphrased Dan Tarlock. *ibid*.

enforcement in water allocation. The role of law should ensure stability and facilitate the implementation of effective strategies for dealing with scarcity, and also prevent or resolve disputes.⁶⁰⁶ A negotiated seasonal plan that adjusts water allocation to water availability would be ideal.⁶⁰⁷ “One of the key rules for government is to create a framework within which strangers can peacefully agree to cooperate, and to coordinate their actions.”⁶⁰⁸

The traditional formal recognition of water rights does not enable the state to effectively allocate water on an efficient basis since it does not control the types of use and users of the resource and does not provide tools for solving water rights disputes. Certainly in this context BWR would not be a wise alternative for water scarcity problems, especially if it is awarded to an individual project that does not involve a multiple use approach and public interests. Before BWR can be a solution for scarcity, allocation must be improved. For this reason, a narrow legal concept of water rights cannot be considered secure enough for granting water resources efficiently and equally for potential users. Furthermore, a water rights concept has to consider rights and access, water transfers, and third-party effects as well as transaction costs, which are significant for a realistic

⁶⁰⁵Dan Tarlock, *ibid.*, at 195.

⁶⁰⁶Stephen McCaffrey, “Water Scarcity: Institutional and Legal Responses”, ed. Edward H.P. Brans *at al*, *supra* note 603, at 52.

⁶⁰⁷Paraphased Ruth Meinzen-Dick and Margaretha Bakker, *supra* note 596, at 14.

⁶⁰⁸Bryan Bruns, *Water Rights Questions*, paper prepared for the National Seminar on Farmer Water Use Rights, Bandung, Indonesia, 15-17 December 1997. It is available Bryan Bruns, Collected Paper, on line <www.cm.ksc.co.th/~bruns/question.html>

water allocation system and wise environmental management. The need for reallocation of water resources tends to increase especially with the effects of climate change. The reallocation has to be managed constructively based on a well-defined water rights concept because “if new claimants use their political and economic power to expropriate water from existing users, with little or no compensation, this not only creates current injustice but contributes to the prospect of increasing conflict in the future.”⁶⁰⁹

2) Participative and Decentralized Water Management

Besides the principal challenge to establish a water rights concept for better managing the contested claims of current and new users, a water allocation system also has to be established on a user participation basis. Water allocation is influenced by not only the various legal institutions, but also the perception of the public. “While formal laws are important, they frequently fail to coincide with people’s own perceptions of water rights and the ways in which water has been managed at the local level.”⁶¹⁰ If water rights are defined as a “legitimised use” that excludes the collective from standing behind their claim to a benefit, water rights are only as strong as the institution(s) that back them up.⁶¹¹ Governments need to pay attention to the mediating institutions that translate water rights into actual access to water by implementing, enforcing, or modifying rules.

⁶⁰⁹Bryan Bruns, *ibid.*

⁶¹⁰Ruth Meinzen-Dick and Margaretha Bakler, *supra* note 596, at 4.

⁶¹¹Paraphrased Ruth Meinzen-Dick and Margaretha Bakler, *ibid.*

Governments have ownership and full rights to control, use, and dispose of water but they have lacked the ability to manage and to enforce statutes.

Communities and their local institutions may play an important role in the enforcement of water allocation rules. "Most societies and religions have devised varying forms of rights and rules pertaining to who may use what kinds of water in what ways. Local norms and accepted practices may differ from all of the other types of 'water law'."⁶¹² Thus, only a participatory and decentralised water allocation system may legitimately point out for whom, how much, when and where water resources are needed. Public participation in water management, which includes water allocation decision-making, is essential for creating equitable means for dealing with conflicting claims.

Regarding scarcity issues, community participation is just as important as legal and institutional arrangements are. "In order to understand the legal and institutional challenges we need to know at least a little bit about the factual aspects of water scarcity – because laws are simply the tools a community can use to implement policy responses to particular problems."⁶¹³ Water pricing appears to be an excellent water policy tool and an incentive to guide water resources allocation and use, which may contribute to solving scarcity problems. This can only occur, however, if the public recognises the economic value of water and has the will to pay for it. A multiple uses approach also depends on public

involvement. As Ruth Meinzen-Dick and Margaretha Bakler point out, “taking a multi-faceted approach to recognizing water uses, users, and types of water rights is likely to be even more important to ensure the participation of all relevant stakeholders in the negotiations over any water allocation from irrigation to municipal and industrial use.”⁶¹⁴

Information systems are another water policy mechanism that depends on public participation for better efficiency. These systems have to regularly update information on the availability of and demand for water resources. No one is better placed than the collective to provide water resources information, which then has to be technically analysed by governmental agencies.

Public participation may be a solution for reforming and correcting the legal conceptual defects of water allocation rules and administrative models. Administrative discretion in allocating water resources and the lack of a well-defined water rights concept allow corruption but more public involvement may contribute to more fair politics in which all sectors participate.⁶¹⁵

⁶¹²*Ibid.*

⁶¹³Stephen McCaffrey, *supra* note 606, at 44.

⁶¹⁴Ruth Meinzen-Dick and Margaretha Bakker, *supra* note 596, at 26.

⁶¹⁵ An example that “allocation has rested largely upon the political process”: “In the United States, in particular, large-scale development schemes were the outcome of a combination of three factors: crises (usually natural catastrophes, though that preceding the New Deal 1933-9 was an economic one); a dominating political personality; and identification by vested-interest groups with the major federal agencies responsible for the implementation of large projects (dams, hydroelectric schemes, etc.). T. O’ Oriordan and Rosemary J., “Choice in Water Use”, *supra* note 432, at 548.

My proposal of a co-management model between government and society is an attempt at water allocation reform, which may grant means of communication, education and awareness. This system would provide incentives for conservation, re-use, protection and stewardship. Planning, implementation and assessment are equally important parts of the water policy, and they should have the same value.

Thus, governments should implement such a model before opting for BWR. While there is no co-management model, a BWR prohibition can exist but it is not enough for protecting aquatic ecosystems and uses of water without principles such as public participation. In fact, the existence of BWR prohibition without a co-management water allocation policy may become as inefficient as a lack of rules because of the difficulty of enforcement. The enforcement of laws depends upon public cooperation in accepting and following the imposed rules.

It is not only the lack of proper water legislation that can result in too little, too late protection for water resources but also a policy lacking in effective directions such as planning, inspection, monitoring and enforcement with public involvement. Legal and policy frameworks have to go together to support a reasonable water allocation. A weak enforcement usually results from inappropriate policy tools and institutional arrangements. A water allocation policy is a complex and continual process that involves enforcement of laws, monitoring and assessment of activities, and requires public participation. Everywhere the management of an

environmental and resource policy has been emphasised mainly because of the growing complexity of three forces: market economy, defenders of the public interest acting as guardians of perceived societal needs and values, and governmental implementation machinery.⁶¹⁶ “While economic factors greatly influence the nature of resource use and exploitation, ultimately the domain of political and bureaucratic devices is responsible for policy realization and its consequences.”⁶¹⁷ As this thesis has argued the legal and institutional arrangements are essential for an environmental policy but these must involve public attitudes and consider human behaviors in developing principles that will guarantee that economic development happens in a sustainable environmental manner.

It is hoped, of course, that public participation and interests in water conservation will direct water licensing departments to coordinate their actions to guarantee adequate water protection and management policies and to overcome the lack of legislation for water allocation and BWR issues. As Manitobans maintained in public consultations,⁶¹⁸ conservation purposes should be included as a priority in water laws and policies. Furthermore, the management of water, as a public property, implies and entitles power as well as liability to the administrator who must care for public interests and maintain water conservation. Otherwise, this

⁶¹⁶This emphasis has developed during the past two decades . whithout a change of focus: O. P. Dwivedi , *Resources and the Environment: Policy Perspectives for Canada*, *supra* note 437, at 13.

⁶¹⁷*Ibid.*, at 14.

⁶¹⁸*Water Use & Allocation*. *supra* note 9, at 10.

administration will be an inefficient management or simply an abuser of power. Water users and communities have to be involved in water allocation decision-making because:

The ability to implement reforms in regional water utilization patterns is influenced by specific social and historical contexts within which local populations define and utilize scarce water resources.⁶¹⁹

Institutional changes must include co-management in allocating water resources, which may then contribute to a balance of demand/supply, and consequently reduce scarcity and needs for water transfers. The traditional order-command approach has failed, especially in measuring, monitoring and mitigating the scarcity problems.

3) An Integrated Strategy

“It is widely recognized by experts in the field that any strategy to address water scarcity must employ basin-wide integrated planning and management.”⁶²⁰ The Agenda 21 established, in Section 18.3:

The widespread scarcity, gradual destruction and aggravated pollution of freshwater resources in many world regions, along with the progressive encroachment of incompatible activities, demand integrated water resources planning and management. Such integration must cover all types of interrelated freshwater bodies, including both surface water and groundwater, and duly consider water quantity and quality aspects. The multisectoral nature of water resources development in the context of socio-economic development must be recognized, as well as the multi-interest utilization of water resources for water supply and sanitation, agriculture, industry, urban development,

⁶¹⁹Scan P. Keenan, Richard S. Krannich, and Michael S. Walker, *supra* note 279, at 279.

⁶²⁰Stephen McCaffrey, *supra* note 606, at 53.

hydropower generation, inland fisheries, transportation, recreation, low and flat lands management and other activities. Rational water utilization schemes for the development of surface and underground water-supply sources and other potential sources have to be supported by concurrent water conservation and wastage minimization measures.⁶²¹

Thus, water scarcity problems may be solved by an integrated water resources planning and management system that induces rational water utilization and consequently water conservation. This integrated system ought to take into account an **integrated resource management (IRM)**, a **watershed approach**, and **joint actions**.

An **integrated resource management (IRM)** is “an interdisciplinary and comprehensive approach to decision-making for managing natural resources.”⁶²²

IRM integrates decisions, legislation, policies, programs and activities across resource sectors to gain the best overall long-term benefits for society and to minimize conflicts. This approach recognizes that the use of a resource for one purpose can affect the use of that resource for other purposes.

As a strategy for protection of the aquatic environment, it may include, for instance, matters relating to land, other resources, and water conservation objectives. The term "aquatic environment" means “the

⁶²¹Report of the United Nations Conference on Environment and development , Rio de Janeiro, 3-14 June 1992, Chapter 18, Protection of the Quality and Supply of Freshwater Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources, on line A-21: Freshwater Resources [gopher://gopher.undp.org:70/00/unconfs/UNCED/English/a21_18](http://gopher.undp.org:70/00/unconfs/UNCED/English/a21_18)

⁶²²Alberta, Alberta Environment, *Water Legislation- the Framework for Water Management Planning, A Discussion Draft, June 9, 1999* (Alberta Environment: Water, 2000) on line < <http://www.gov.ab.ca/env/water/legislation/index.html>> (last update: 20

components of the earth related to, living in or located in or on water or the beds or shores of a water body, including but not limited to all organic and inorganic matter, and living organisms and their habitat, including fish habitat, and their interacting natural systems.”⁶²³ In other words, “[T]he aquatic environment includes rivers, streams, creeks, riparian areas, lakes, and wetlands, each associated with a unique variety of plant and animal life. The aquatic environment is a complex system that is influenced by many factors such as climate, weather patterns, landscape form and features, geology and groundwater”.⁶²⁴ Furthermore, the aquatic environment is based on four main inter-related elements, each of which is subject to human influence:⁶²⁵ the amount of water available (*water quantity*);⁶²⁶ the chemical and physical characteristics of the water (*water quality*); the physical and biological structure of the water body and the land surrounding it (*habitat*); and, the plants and animals living in or associated with water bodies (*aquatic species*).

These four elements have to be considered by the licensing departments in any of their decision regarding water allocation. Otherwise, water resources are at risk.

June 2000). at 1. at 1. This IRM was proposed by *Alberta's Commitment to Sustainable Resources and Environmental Management*, *ibid.*

⁶²³S.1(h) of *Alberta Water Act*, *supra* note 19. Moreover S.8 (1) of this act establishes that [i]n this section, "biological diversity" means the variability among living organisms and the ecological complexes of which they are a part. and includes diversity within and between species and ecosystems, *ibid.*

⁶²⁴*Alberta, the Framework for Water Management Planning*, *supra* note 622.

⁶²⁵*Ibid.*, at 13.

⁶²⁶Element that receives influence from bulk water removal.

The integration required for a water allocation system also must have the aquatic ecosystem as a unit of management also known as a drainage basin, watershed or river basin.

On both the national and international levels, water resources are best protected and managed as a unit, that is, by the **drainage basin** as a whole, rather than parts thereof. Otherwise, policy coordination for a basin will be difficult, if not impossible, leading to inefficiencies and disputes. Further, it is important that water resources planning, management and development be conducted in an integrated manner so that gains in one sector – e.g. industrial uses- will not be offset by losses in another- e.g. domestic use.⁶²⁷

Like Canada, Brazil also understands the watershed as land drained by waters, and it is used as a territorial unit.⁶²⁸ Both systems, Canadian and Brazilian, employ watershed approaches. However, this approach is a legal disposition in Brazil,⁶²⁹ while it is a guide in Canada, as a management direction in some water policies such as those in Alberta, British Columbia, and Manitoba. Thus the water allocation systems in both countries could take into account the watershed approach and make the water allocation more integrated.

The adoption of a watershed approach is more easily accomplished in Brazil than in Canada, because in Brazil this approach is a legal disposition instead of only a suggested direction, as it is in Canada. Still, during the 1960s, the Canadian federal government and most provincial

⁶²⁷Stephen McCaffrey, *supra* note 606, at 53 [emphasis added].

⁶²⁸For the Canadian watershed concept see Environment Canada's definition in Chapter Two, note 176. Article I(item V) of Law 9433/97 establishes the Brazilian concept of watershed, *supra* note 19.

⁶²⁹Article I (item V) of Law 9433/97, *supra* note 19.

governments established water management based on several river basin planning studies. In 1967 with the *Canada Water Act*, the federal government financed river basin planning in each region as a new water management approach. The Saint John's, Qu'Appelle and Okanagan River Basins,⁶³⁰ for example, were included in this new approach.

This watershed approach may be better for environmental protection because a watershed is considered as a whole ecosystem in which its physical and human resources are also taken into account. Considering water as an element or specific component does not offer an overall view of the problem. Certainly, adopting a watershed approach requires complex methods and strategies like operational research (OR) techniques in river basin management.⁶³¹

Due to the diversity and complexity of problems that arise within the field of water resources, river basin management can often be a challenging and arduous task. Not only must the complex physical processes of water resources problems be properly understood, but perplexing socio-economic factors must be considered as well if the water resources of a given area are to be effectively managed and utilized. Within the discipline of operational research (OR), a philosophical approach to problem solving combined with a wide variety of comprehensive techniques have been developed for handling physical and socio-economic considerations which occur in the management of large scale systems such as river basins.⁶³²

⁶³⁰Donald Tate, "River Basin Development in Canada", in Bruce Mitchell & W. R. Derrick Sewell. *Canadian Resource Policies: Problems and Prospects* (Toronto: Methuen, 1981). at 176.

⁶³¹Bruce Mitchell & James S. Gardner. *River Basin Management: Canadian Experiences* (Ontario: the Department of Geography, Faculty of Environmental Studies, University of Waterloo, 1983). c. 27, at 393-409.

From this analysis it is possible to achieve a universal solution to such problems. A water allocation system has to consider water quantity as well as water quality.

Consider for example the damage to property and human life caused by the misuse of lands and mis-management of watersheds, so often underestimated, and also the dwindling resources of land through floods, erosion, and droughts, the losses in water resources through decrease of water retention and infiltration rates, lowering of the groundwater table, drying up of springs and the interrupted flow of rivers, all of which are occurring all over the world at increasing rates.⁶³³

With these problems to consider, the application of a watershed approach is pertinent because it may deal with physical, environmental, financial and economic feasibilities, as well as with social and political realities. With this later aspect, there may then be public participation and public interests taken into the decision-making process.

Applying a watershed approach for managing water policy requires one to think in terms of not only an integrated ecosystem but also of an integration of the jurisdictions involved. This integration, or joint action is required by the authorities for solving water jurisdictional issues.

A **joint action** by federated entities has to be considered in any water management system, to minimise problems that a federal system,

⁶³² *Ibid.*, at 393.

⁶³³ Paraphrased. N. Gil. *Watershed Development with Special Reference to Soil and Water Conservation*. (Rome: UN FAO Soils Bulletin 44, 1979), at 2.

such as in Brazil and Canada, appears to generate. However, some considerations regarding this kind of action are:

First: Joint actions are necessary by each governmental agency that is jurisdictionally involved in regulating the efficient use and conservation of water. However, the issue is how to act together? Will a minimum number or a large variety of institutions be involved?

Administrators must answer current needs in the most forceful way, by consolidating institutions. A large number of governmental agencies cannot exercise their functions with dynamism, even when administrative action can be naturally exercised "*ex officio*" because they still need to communicate with each other. This communication and the response process are usually not as fast as the public desire. For example, one asks for a water licence in a system with several entities responsible for the water award. The potential water user has to wait for all agencies to give a legal-administrative opinion. So the more agencies, the more bureaucratic will be the procedures. When decision-making is spread outward and upward, the process is slow and inefficient. The costs of such a system are more than those of a simply structured one, because more employees and material resource support are necessary.

Therefore, the first challenge is to obtain joint participation of the related governmental levels, sectors and users, without creating a huge

bureaucratic system.⁶³⁴ Such a joint commission should have competence for resolving conflicts among two or more jurisdictions, and for promoting and implementing water allocation according to related parties planning with the national, regional, local and user sector interests. In this way, this commission can act more to prevent problems than to resolve them, since the water plan is bound by the related parties. Any resolution of conflicts by this joint commission, however, should be compulsory and enforceable, even as an administrative decision. In inter-jurisdictional issues, administrative decisions in governmental conflicts appear to be more efficient as “cooperative federalism”⁶³⁵ than by court judgments.

The goal of de-centralised management is to resolve problems at the local or regional level of government, with the federal level only as the last resort. However, de-centralised management without an appropriate link and cooperative action among governmental agencies at different levels can mean an inefficient public service. Under the co-operative model solutions for water allocation problems must be achieved by co-operation between regions, and participation in the planning and fulfillment of water policies is necessary.⁶³⁶ This means that all levels of government must co-

⁶³⁴ Article 34 of Law 9433/97, *supra* note 18, foresees a national council on water resources that has some intentions to be a sort of joint commission but its evaluation will be only possible in a few years because this idea has just been implemented. However, there are many socio-economic and political difficulties: neither state councils, watershed committees and user organisations are established in all Brazilian States. They are organising themselves.

⁶³⁵ Donald Tate, *supra* note 630.

⁶³⁶ This is what Article 225 of Brazilian Constitution emphasises when it says that an ecologically balanced environment is the duty of the government and of the community

ordinate individual activities to ensure that water is protected and managed. This is a complex challenge, to harmonise different jurisdictions and sectors. Yet an example of such harmonisation could exist, if a water allocation system in Manitoba would have integrated the Manitoba Sustainable Development Strategy, the Land and Water Strategy, the Manitoba Water Policies, and Fishing Protection, along with all provincial related departments (for example, environmental and water), the federal government (fishing), and users.

A joint solution is a requisite for water laws, water allocation systems and BWR rules to operate efficiently. The feature, real content, interpretation and application of the norms of water law must be completely democratic. The accomplishment of democracy implies an involvement of the state functions with the participation of sectors of the society and the collective. Within this resides the real performance of the sustainability strategy to be developed.⁶³⁷

Achieving a common understanding by different levels of government and interested groups has, however, been almost impossible to implement in practice because it is an example of genuine democracy. The implementation of a true democracy is a difficulty that has been faced for a long period of human history without any authentic solutions such as true

for present and future generations. *supra* note 150. Law 9433/97 privileges the cooperation principle, *supra* note 18.

⁶³⁷Recall sustainable development is that which "meets the needs of the present without compromising the ability of future generations to meet their own needs". *supra* note 433. at 8.

public participation in decision-making processes.⁶³⁸ But, if this democratic means of decision-making is concretized, it can also identify people's priorities and achieve a balanced solution for water use and allocation management.

Second: The choice of what has to be preserved is one of the problems in joint action. In fact, it is one of the prevention problems.⁶³⁹ what must be preserved and consequently prevented from exploitation.⁶⁴⁰ The value of natural resources is not absolutely unique because it is linked to time and the space in which they are located.

Water resources preservation depends on the evaluation of the activity that it will be related to. It is essential to question, on the practical perspective of a precautionary principle,⁶⁴¹ the reason for the existence of this activity. Thus, it is necessary to verify in any undertaking such as BWR the relationship between its objective and the risk of its potential damage for the implementation of a precautionary principle. The conflict between conservation and use is undeniable. Moreover, environmental precaution is necessarily a change in the way of developing economic activity. That is also the concern related to the entire discussion about sustainable development. In summary, the general criterion for the accomplishment of determined activity would be its necessity⁶⁴² based on the improvement -

and not damage – of quality of life. For instance, is BWR necessary for improving quality of life? Whose quality of life?

Water allocation ought to implement the suggestion of a new and well-defined concept of water rights, a participative and decentralized water management, and an integrated strategy with the pursuit of sustainability. However, that should be real sustainability because several sustainable programs have been launched in recent governmental agendas but their effectiveness has not been evaluated. Considering sustainable development as “any development that meets the needs of the present without compromising the ability of future generation to meet their own needs.”⁶⁴³ It implies that it is appropriate to modify nature only when it is for the maintenance of human life, for protection of another basic value, or for the appropriation of resources without damaging its preservation. Consequently, sustainability is a valid principle for all renewable natural resources such as water resources. Sustainable development is a process that occurs through natural resource exploitation, the direction of investments, and the orientation of technological development, which should be harmonized and coordinated by institutional changes, in order to

⁶³⁹That is besides the problems with technology and its cost, which most countries do not have the budget or policies for developing a prevention program.

⁶⁴⁰Cristiane Derani, *Direito Ambiental Economico*, 1ª edicao (Sao Paulo: Max Limonad, 1997), at 175.

⁶⁴¹ *Ibid.*, paraphrased at 168.

⁶⁴²“Necessity assumes an objective aspect when it opposes its subjectivity created by the market.” *ibid.*, Cristiane Derani suggested that “this criterion must operate, especially, in the three periods of training where the human activity is potentially harmful to the environment: appropriation of natural resources, industrial transit of products, emissions”. *ibid.*, at 168. translation by Sandra Cilce De Aquino.

guarantee the satisfaction of human needs for the current and future generation. As a result, “the implementation of sustainable development requires a fair distribution of wealth, within and between countries”⁶⁴⁴ for allowing them to make their own choices in each stage of this process.

However, this accomplishment faces several problems⁶⁴⁵ such as those related to: a) the concept of necessity and its relation to welfare, b) the possibility of an environmental policy that considers either economic or ecological sustainability; and c) the limits of development as not only natural imposition but also social meaning. In classic economics, the meaning of welfare relates to individual satisfaction of material needs.⁶⁴⁶ However, the notion of necessity has historical and cultural aspects, and it is not adequate in itself to describe the changing conditions of every society and, above all of future generations. As a result, the concept of sustainable development for supplying the needs of current and future generation disregards the social determination of necessity and its variations. Sometimes, the concepts of natural and social necessities are misunderstood. Nowadays, marketing is responsible for creating necessities, and without this situation the consumer-driven society would probably not survive. It is important, though, to distinguish between natural and social necessities, because a necessity is not exclusively a

⁶⁴³ *Supra* note 433.

⁶⁴⁴ Cristiane Derani, *supra* note 640, at 168.

⁶⁴⁵ *Ibid.* Cristiane Derani discusses these problems and other related ones in “The Certitude of Sustainable Development Theory for the Protection of Natural Resources” under the analysis of economic aspects, Section III, item 5.

physical need. In conclusion, a revision of the economy is essential to satisfy the necessities of all citizens tying the consumption to strictly necessary goods, and inhibiting the increase of consumption. Otherwise, sustainable development will be only a figure of speech. Thus, it is necessary to establish a system of water management in which self-governance, regulatory and market principles are integrated for establishing adaptive allocation mechanisms to answer current and potential water needs in times of change in water availability and for avoiding shortages and conflicts among water users. This would be the best system to avoid the need for BWR and to protect the aquatic ecosystems of both Canada and Brazil for their future generations.

⁶⁴⁶*ibid.*

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