PRIVATIZATION OF WATER UTILITIES FROM AND INTEGRATED WATER RESOURCES MANAGEMENT PERSPECTIVE

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ABSTRACT

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This submission reviews the two successful examples of water markets, one in the developed world, the Murray Darling Basin in Australia and other in the developing world, the Limari Basin case in Chile respectively. Of central importance, we find the commodification of a natural resource, water, through a process of the progressing neoliberal agenda. As regards the outcome of this process in these two cases; while on the one hand the water markets have contributed to a more efficient allocation of water resources from less efficient to more efficient uses, on the other hand, problems related to environmental degradation in the former case and the social inequity in the latter have been unable to be solved.

Keywords: Integrated Water Resources Management, neoliberalism, water markets, water pricing, Murray Darling Basin, Limari Basin

ÖZ

SU HİZMETLERİNİN ÖZELLEŞTİRİLMESİNİN BÜTÜNLEŞİK SU KAYNAKLARI YÖNETİMİ AÇISINDAN DEĞERLENDİRİLMESİ

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Bu tez iki başarılı su piyasası örneğini, biri gelişmiş ülkelere örnek olarak Avustralya'daki Murray Darling Havzası'nı, diğeri de gelişmekte olan dünyadan Şili'deki Limari Havzası'nı sırayla gözden geçirmektedir. Bu bağlamda, neoliberal gündemin ilerlemesi sürecinin bir sonucu olarak doğal bir kaynak olan suyun metalaştırılması hayati önemdedir. Sözkonusu iki vakanın sonuçlarıyla ilgili olarak, su piyasaları bir taraftan su kaynaklarının görece az verimli kullanımlardan daha verimli kullanımlara aktarımına katkı yaparken, diğer taraftan ilk vakada çevresel, ikinci vakada ise toplumsal hakkaniyetsizliğe dair sorunların çözümünde yetersiz kalmıştır.

Anahtar Kelimeler: Bütünleşik su kaynakları yönetimi, neoliberalizm, su piyasaları, suyun fiyatlandırılması, Murray-Darling Havzası, Limari Havzası.

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CHAPTER 1

INTRODUCTION

The world has been suffering from a water crisis revealed in the most devastating form in developing countries where on the one hand social and economic challenges related to poverty, inequity and poor infrastructure are confronted; and on the other, to which conditionality clauses are imposed from the side of international financial institutions endowed with highly needed and considerable financial power. Moreover, these countries are situated in arid and semi arid areas of the world, adding to the gravity of the situation.

With the aim of concretizing the outlook of the crisis, some figures are provided as follows:

- While the world population tripled, the water consumption was multiplied roughly by six during the last century.
- In line with this trend, the water supplies continue to decrease and the demand keeps on increasing in an unsustainable manner; put differently, water consumption has been doubled in the second half of the last century, and the average supply of water per person is expected to drop by one third over the twenty years to come.
- Again in line with this trend, half of the world's accessible freshwater resources are currently consumed by the world population, and it is expected by 2025 that this ratio will rise to three quarters.
- Presently, one billion people –or one sixth of the world population- is deprived of access to safe drinking water while two billion people lack connection to any kind of waste water treatment infrastructure.
- By the middle of this century, seven billion people in sixty countries will be coming across water scarcity. Two billion of these people in 48 countries will be harshly pressed by this problem.

- Each year, water treatment related diseases cause death of seven million people, 5 millions of which is that of children. Thirty to fifty times more of water is consumed by a child born in the developed world compared to one born in the developing world.
- In developing countries, more than two thirds of industrial sewerage is pumped into various waterways without being subject to any kind of treatment.
- Irrigated land was increased fivefold during the twentieth century and around 70% of water is used in agriculture. Nearly 20% is consumed by the industrial sector and the remaining ten percent is allocated to municipal and residential uses.
- In terms of environmental half of wetlands have vanished the course of the last century, and one third of catchment areas have lost three quarters of their forests.
- One liter of wastewater contaminates around eight liters of freshwater. If population and pollution proceed at the same pace, 18,000 km^3 of freshwater resources will be depleted by 2050 – almost nine times the total amount countries currently use each year for irrigation, which is by far the largest consumer of the resource.

The process of freshwater becoming an economic resource has been taking place since the early 1990s, and was started in the decade of the 1980s during which the neoliberal agenda was started to be pushed by the international business cycles in an environment rendered permissive by factors like the Nixon Shock and the two oil crises in the previous decade. More precisely, the Bretton Woods system had collapsed and paved the way freely floating exchange rates and unregulated financial markets. Countries of the Third World were rendered obliged to abide by these rules imposed –or experimented- by the IMF with the structural adjustment programs.

Privatization and deregulation were adopted as the “cure for all” to the problems confronted at the end of the Bretton Woods system. National borders of capital

markets started to wither and gained a global dimension, and the governance structures started to be organized at supranational levels confronting national regulatory authority of governments. In other words, the social contract of the mid-twentieth century was fading to leave its place to a new set of rules and norms where the conception of state as the body responsible for the welfare of its citizens was being replaced by that of the individual to provide for himself. Accordingly, the duty of the state to provide public goods and services was transferred to the private sector which is *expected* to be employing resources more efficiently. Collapse of the communist bloc and the consequent end of the Cold War added to the perception of the capitalist system as the only viable solution to the world's economic problems produced by mismanagement or misgovernance.

At this point the Washington Consensus was conceived by John Williamson, and supported the institutions of IMF and the World Bank. The "Ten Commandments" of the Consensus accord priority to macroeconomic stability. Fiscal discipline which aims to decrease budget deficits, hence public expenditure is a sinequanon condition for countries to achieve macroeconomic stability. Moreover, practices of privatization and deregulation, which are believed to be hampering the efficiency of all economic activities and actors are encouraged. Financial markets are to be liberalized in order to ensure that countries *benefit* from foreign financial capital (which, by nature, acts upon the stimulus of profit, and the sudden withdrawal of which may lead countries to come across deep crises where they lose a portion of their national income).

As this line of thinking became the conventional wisdom among policy makers, the role of the private sector started to emerge and even replace that of the state in the provision of water. This development was reflected in the world-wide water reunions that convened; while the water was accepted as a human right in the 1977 Mar del Plata Conference, it is established as an economic good which should be treated economically in the 1992 Dublin Conference, the four principles of which constitute the Integrated Water Resources Management paradigm.

As an extension of this process, water markets have been put into practice and water has been priced. In order to show that the picture is not totally dim, two examples are provided.

Experience with water markets has been multiplying both in the developed and developing countries as a result of a search for solutions to the question of increasing demand and decreasing supply of water resources. Since water is a unique element, its assessment cannot be reduced to that of a merely economic good, and its social and environmental dimensions have to be taken into account. This is the reason lying behind intense discussions concerning the viability, acceptability, the functioning etc. of water markets.

Australia's water situation is marked by scarcity and variability. The country is the driest inhabited continental land mass. Australia is the country which stores more water per capita than any other in the world and irrigated agriculture accounts for over 70% of all water used. Being composed of five jurisdictions and constituting the catchment of two major rivers, namely Darling River and River Murray, the Murray-Darling Basin is the largest surface water system in Australia. The Basin is run under the agreement of Murray-Darling Basin Agreement (1992) signed between the Commonwealth, New South Wales, Victoria, Queensland and South Australia.

As regards Chile, water is a scarce resource in large parts of the country; and there is a long tradition of water sharing and trading, and water rights have been recognized since the 1920s, although not formalized until recently. The Limari Valley is regarded as one of the most successful cases in Chile, though it is immune from neither problems nor criticisms. The Water Code of 1981 is under severe attacks due to its *over* liberal character that minimizes the role of the state and renders consumers powerless vis-à-vis large corporations.

Have water markets, as suggested by their proponents, contributed to the water problem of the Murray-Darling Basin and Limari Basin, and if yes, to what extent

have they succeeded? What have been the prices paid in economic, social and environmental terms? In order to find an answer to these questions, the milestones for water in the international agenda will be reviewed in order to draw the big picture relating to the development of the Integrated Water Resources Management (IWRM) concept in the second chapter. This will be followed by a thorough evaluation of the IWRM concept in the third chapter. Next, a theoretical framework on water markets will be given. In the fourth chapter, the example of Murray Darling Basin from a developed country and in the fifth chapter the Limari example from an upper-middle income country will be analyzed. Finally there will be an assessment of both cases where they will be compared.

CHAPTER 2

MILESTONES FOR WATER IN THE INTERNATIONAL AGENDA: FROM MAR DEL PLATA TO MEXICO CITY

Water, due to various qualities it possesses that renders it unique among which are highlighted its vitality for life and insubstituability, has been a focal point of attention in the international arena, at both governmental and non-governmental levels since the decade of 1970s and has been treated in conventions that culminated in a range of norms and principles forming the IWRM. The outcomes of these reunions have evolved starting from the Mar del Plata Conference where water is accepted as a basic social and economic right, through the Dublin Conference in which the highly controversial clause related to the economic value of water is produced, with an increasing emphasis accorded to the private sector. The last important meeting which is the Fourth World Water Forum underlines the transnational and local character of the issue, without in any way excluding the inclusion of private actors.

The United Nations Conference on Water held in Mar del Plata, Argentina, in 1977, where the Mar del Plata Action Plan was conceived, is the first international conference where water is treated exclusively on the international agenda from an IWRM perspective and is defined as a common good according to which "all peoples, whatever their stage of development and their social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs"[1]. A thorough evaluation of the status of the water resources, guarantee of sufficient water to meet basic human needs and increasing water use efficiency are among the objectives to be realized so as not to

[1] Report of the United Nations Conference on Water, Mar Del Plata, 14-25 March 1977 (United Nations Publication, Sales No: F.77.II.A.12), first part, chap. I, resolution II, seen at: http://www.un.org/esa/sustdev/documents/agenda21/french/action18.htm#2/, accessed on 29 October 2007

come across a global water crisis before the end of twentieth century. The necessity to evaluate the situation of water resources per se and in terms of their sectoral efficiency from a multi-faceted perspective taking into consideration the uniqueness of each country and combining approaches of multiple disciplines such as physics, engineering as well as economics and social sciences was also recognized. A variety of factors such as health, environment, politics, and inter-institutional coordination at national, regional and international levels together with the mobilization of political, financial and human resources are accorded special emphasis with this regard.

The Mar del Plata Conference is defined as a success by Rahaman and Varis[2], "… due to the active participation of the developing world and the discussions on various aspects of water management, specifically the country and region specific analyses". While evaluating the related developments at the policy-making level in the Third World, Biswas[3] underlines that it was the first time that numerous Third World countries

> "…put in motion processes to assess the availability and distribution of surface and groundwater resources, and existing and futures patterns of water demands and uses. Many developing countries not only have continued these activities, which were initiated during the preparatory process of the Water Conference, but also have significantly strengthened them progressively during the past two decades".

Another outcome of the conference is the suggestion of the decade of the 1980's to be adopted as the International Water Supply and Sanitation Decade (IWSSD) in order to stimulate political interest and investment in the sector and to provide potable water to large masses[4], by the year 1990**.**

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[2] Rahaman M.M., Varis O., Integrated water resources management: evolution, prospects and future challenges, Helsinki University of Technology Water Resources Laboratory, accessed at: http://ejournal.nbii.org/archives/vol1iss1/0407-03.rahaman.html

[3] Biswas, A., From Mar del Plata to Kyoto: An Analysis of Global Water Policy Dialogues, Centre for Education and Documentation, (2003), accessible at: http://www.doccentre.net/docsweb/water1/water-biswas.htm

[4] Rahaman M.M., Varis O., Integrated water resources management: evolution, prospects and future challenges, Helsinki University of Technology Water Resources Laboratory, accessibble at: http://ejournal.nbii.org/archives/vol1iss1/0407-03.rahaman.html

In the beginning of the decade according to the World Health Organization estimates, nearly 40% of the world population, 1.8 billion people more precisely, lived without access to safe water drinking supply. The situation was more severe in rural areas where the same figure reached 69%. In line with expectations, the sanitation coverage figuring around 13% in these areas pushed for urgent intervention[5].

The improvements matriculated during the IWSSD are providing access of 1.2 billion people to water and of 770 million to sanitation in developing countries;

> "(H)owever, growth and rapid urbanization, together with the low level of public awareness about health, has drastically reduced many countries' abilities to keep up with need; and today, there are still almost 1.1 billion people who have inadequate access to water and 2.4 billion without appropriate sanitation"[6].

For example in the urban areas of the African continent alone, the rate of population supplied with safe drinking water and suitable sanitation facilities increased from 66% and 54% respectively to 77% and 79% with 40 and 52 million people having been added to these infrastructural systems by 1988[7]. The change in the rural areas is more modest: an additional 87 and 1 million people were supplied respectively with these facilities, pushing the coverage of rural water supply and sanitation from 22% and 21% in 1981 to 26% and 17% in 1988[8]. In India, which sets another example to the developing world, "only 217 of the country's 3,119 towns and cities have even partial sewage-treatment facilities, according to a 1986 study by the World Resources Institute. As a result, an

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[5] Black, Maggie, 1978-1998 Learning What Works A 20 Year Retrospective View on International Water and Sanitation Cooperation, (1998), United Nations Development Program and the World Bank, accessed at: http://www.un.org/esa/sustdev/sdissues/water/InternationalWaterDecade1981-1990_review.pdf, accessed on: 9 November 2007

[6] Web page of The Global Development Research Center accessible at: http://www.gdrc.org/uem/water/decade_05-15/first-decade.html

[7] Dioné, Josué, UN Water/Africa, (1988), African Water Development Report Interim Version, p.1, accessed at: http://www.uneca.org/awich/African_Water_Regional_Report/chapter1.pdf

[8] Ibid.

estimated 70% of India's total surface water is polluted"[9]. "Despite the failure to meet the quantitative goals, much was learnt from the experience of the water and sanitation decade... There was further realisation of the importance of comprehensive and balance country-specific approaches to the water and sanitation problem. Most importantly, perhaps, was the realisation that the achievement of this goal that was set at the beginning of the decade would take far more time and cost far more money than was originally thought."[10]

Despite the high level of expectations of implementation as regards the IWRM principles agreed upon in the Mar del Plata Conference during the decade of 1980's, the issue was accorded trivial importance in the international fora, for instance, Brundtland Commission Report which laid the cornerstones to the concept of sustainable development in international policy, hardly addressed the issue of water[11].

One occasion that could be considered as an opportunity to bring attention at the international level back to the issue of water was the International Conference on Water and Environment organized in 1992, also known as the Dublin Conference.

The basic outcome of the Dublin Conference was the consensus on the Dublin Principles the fourth of which stirred strong oppositions due to concerns on equity and poverty, as will be treated in the paragraphs to come:

- Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment

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[9] United Nations Association in Canada, UNA-Canada's "On the Road to Brazil" Series Issue Paper No. 7, Accessible at: http://www.unac.org/en/link_learn/monitoring/susdev_archives_water.asp

[10] United Nations Educational Scientific and Cultural Organization, World Water Assessment Programme for Development, Capacity Building and the Environment: Milestones, Accessible at: http://www.unesco.org/water/wwap/milestones/index.shtml

[11] Rahaman M.M., Varis O., Integrated water resources management: evolution, prospects and future challenges, Helsinki University of Technology Water Resources Laboratory, accessed at: http://ejournal.nbii.org/archives/vol1iss1/0407-03.rahaman.html

- Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels
- Women play a central part in the provision, management and safeguarding of water
- Water has an economic value in all its competing uses and should be recognized as an economic good.

The Dublin Conference was destined to be insignificant for a number of reasons. Preceding the Rio United Nations Conference on Environment and Development (UNCED) -where internationally binding decisions could and were going to be taken given that the conference was an intergovernmental one- by only four months, and having been participated mainly by water experts or technicians; the results conceived by that conference were far from producing any effect on the Rio Conference. More precisely, the UNCED organized at the intergovernmental level was not going to take into consideration the conclusions produced by the Dublin Conference. Besides, the period of four months was insufficient to incorporate the ideas (that might have been) formed in the Dublin Conference into the negotiation process and conclusions of the Rio Conference.

Among the other limitations of the Dublin Conference can be mentioned the lack of participation from the developing countries unlike its precedent in Mar del Plata, and the omission of (or even retrogression back from) the gains acquired in the latter, especially in the sense of water being regarded as an economic good. Also, the absence of clear and concrete suggestions on ways to implement the aforementioned principles "in the context of complex water management scenarios in the developing countries"[12] raised criticisms from the part of water professionals and decisionmakers.

The significance of the Dublin Principles lies in the fact that the necessity to include various stakeholders to the water management process is underlined;

[12] Ibid. p. 2

including users, planners, policy-makers and with special attention paid to women. Also, recognition of water as a finite source per se and the furthering of that recognition paving the way to qualifying water as an economic good with an economic value, exceeds the emphasis accorded to demand management to reach the idea of pricing water "at an affordable price" in order to hinder waste, protect environment and achieve efficiency and equity. However, the framework drawn within such vagueness, either deliberately or not, with the aim of refraining from defining any specific measures /formulae in the determination of the "affordable price" forms another aspect of the Conference under attack. Although it can be estimated that country-specific elements will be born in mind in the precision of that price; not much is said as regards the segments of the population unable to pay the "affordable price" given that the countries confronting water problems in a rather severe way are mostly the developing ones which often fail to provide an equitable distribution of income to their peoples.

Concerning the impacts of this Conference in the development of related policies to and implementation of the IWRM concept; views of Olli and Rahaman[13], and Biswas[14] are in contrast; while the first two authors argue that these principles have been effluent in the later IWRM thinking and adopt a positive view towards their incorporation to the Agenda 21, Biswas argues that "(I)n all probability, all the Chapter 18 of Agenda 21, which deals with water, would have been very similar, irrespective of whether the Dublin Conference had ever been convened or not". A midway point of view is stated in the UN World Water Development Report[15] according to which the Dublin Principles, together with the Agenda 21, "… helped to mobilize change and heralded the beginning of the still very slow

[13] Rahaman M.M., Varis O., Integrated water resources management: evolution, prospects and future challenges, Helsinki University of Technology Water Resources Laboratory, accessed at: http://ejournal.nbii.org/archives/vol1iss1/0407-03.rahaman.html

[14] Biswas, A., From Mar del Plata to Kyoto: An Analysis of Global Water Policy Dialogues, Centre for Education and Documentation, (2003), accessible at: http://www.doccentre.net/docsweb/water1/water-biswas.htm

[15] The United Nations World Water Development Report, Unesco Publishing and Berghahn Books, Paris, (2003), Executive Summary, p.5, Accessible at: http://unesdoc.unesco.org/images/0012/001295/129556e.pdf

evolution in water management practices. Both of these conferences were seminal in that they placed water at the centre of the sustainable development debate".

The next major step related to the positioning of water on the international agenda is represented by the Second World Water Forum[16] held in The Hague and supported in financial and organizational terms by the Dutch government in 17-22 March 2000. In addition to the contributions of this forum in terms of placing IWRM in a higher rank in the world agenda; the main success of the Forum lies in the fact of providing access of a large number of participants, around 5700[17], from numerous groups of stakeholders –including users from different sectors, non-governmental organizations, international organizations, women, water transnational corporations' CEOs as well as governmental officials and so on- from both developed and developing countries.

The Ministerial Declaration, bearing no official status given the fact that the Forum is not a United Nations intergovernmental meeting, signed by ministers of 114 countries, is a framework document providing a general outline of the issue, précising the challenges before achieving water security in the 21st century and ways of coping with them. These challenges are defined as meeting basic water needs, securing food supply, protecting ecosystems, sharing water resources, managing risks, valuing water and governing water wisely. Among these challenges, the one related to valuing water, which would foster privatization, is a quite problematic one given the concerns over equity and impossibility to provide a substitute for water. Another argument opposing privatization other than the equity issue is related to aspects of water like flood control, drought alleviation, water supply, and ecosystem conservation, which render necessary public presence and intervention in the sector.

[16] The First World Water Forum was convened in Marrakech, Morocco, in 1997 upon the proposal of the World Water Council, and given mandate to develop a vision for Water, Life and the Environment in the 21st Century. Accessible at: http://www.ramsar.org/wn/w.n.3wwf_wwf1.htm, website of Ramsar Convention on Wetlands signed in Ramsar, Iran in 1971, (2003).

[17] Web page of the World Water Council, available at: http://www.worldwatercouncil.org/index.php?id=16

Different than the Ministerial Declaration and in line with the Dublin Principles, the 'Vision for Water in the 21st Century' document prepared by a team of technocrats, suggests to "move towards full-cost pricing of water services for all human uses" since water is a scarce good, and hence must be treated as an economic good in order to create and incentive to prevent its overuse. Full cost is composed of the full cost of providing water services, and full cost of obtaining the water used and the full cost of collecting, treating, and disposing the wastewater. However, as regards poor and vulnerable sections of the society, states are *set free* to subsidize access to water and sanitation services, and it is alleged that "(t)oo often, water subsidies are captured by the wealthy, leaving insufficient resources for system operation and expansion and resulting in rationing—with the poor always at the end of the line"[18].

Substantial increase in investments as well as in public funds for research and development in the public interest are among other suggestions of the Commission. Investments are proposed to more than double from their current level of $70-80 billion a year to $180 billion, with half of that amount coming from the local private sector and communities[19]. The remaining half is to be covered by public institutions so as to assure that the disfavored benefit from the new infrastructure in an efficient and effective way, as well as from indirect subsidies[20] without which they otherwise would not have access to etc[21]. The approach oriented towards valuing/pricing of water (and thus bearing a high risk of its commoditization) and the urge to increase the role of the private sector in

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[18] World Commission on Water for the 21st Century, World Water Vision, Chapter 1, p.2, (2000), accessible at, http://www.worldwatercouncil.org/fileadmin/wwc/Library/WWVision/Chapter1.pdf

[19] Ibid, p.3

[20] Indirect subsidies are those paid by the government not to the end-user, instead, to the utility companies for losses caused by below cost tariffs. They can be exemplified by block tariffs and volume-differentiated tariffs. See Le Blanc, D., A Framework for Analyzing Tariffs and Subsidies in Water Provision to Urban Households in Developing Countries, United Nations Division for Sustainable Development, (2007), p.19, available at: http://www.un.org/esa/sustdev/publications/water_tariffs.pdf

[21] World Water Vision, p.3

that area are reflected in the explanation of the need and possible results to be produced by the augmentation of R&D activities from the side of public authorities; first of all the non-valuation of water and environment does not create stimulus to produce quantitative knowledge about freshwater ecosystems. Likewise, for this very same reason, there is little incentive to develop innovative technologies for water conservation. Although the need for increased public spending to create, develop and disseminate new technological, social and institutional approaches to water management in fields unattractive to private sector is admitted, the general position presented in the Vision document clearly stands for private involvement where possible (or where water is priced).

The Vision document is criticized along two major lines: the perception of environment as a competitor user instead of a sine qua non element of the IWRM approach to which highly underlined engineering and business aspects should be integrated; and the resulting lack of definition of flaws in the global water management[22].

The Hague Forum is generally accepted to be an influent event regarding the investment decisions of various donor and aid agencies, "…such as the UN Millennium Development Goal, to halve the number of people without access to these services by 2015, and World Summit on Sustainable Development targets[23]. But these words were not matched by any clear targets or commitments to action by the more than 100 governments that were represented in The Hague"[24].

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[22] Website of Ramsar Convention on Wetlands signed in Ramsar, Iran in 1971, (2003), accessible at: http://www.ramsar.org/wn/w.n.3wwf_wwf1.htm

[23] A consensus was reached by the governments to prepare their IWRM plans by the year 2005, and to improve sanitation facilities both in houses and public institutions, especially schools. World Summit on Sustainable Development, Background Release, (2002), available at: http://www.un.org/events/wssd/summaries/envdevj1.htm. Besides, provision of safe drinking water, sanitation services and water-management resources for more than 1 billion people over the next decade was selected as a target in the Summit, World Summit on Sustainable Development, Plenary Sixth Meeting, (2002), available at: http://www.un.org/events/wssd/summaries/envdevj6.htm

[24] Website of Ramsar Convention on Wetlands signed in Ramsar, Iran in 1971, (2003), accessible at: http://www.ramsar.org/wn/w.n.3wwf_wwf1.htm

One other point to be underlined concerns the shift of center of gravity from the United Nations to other nongovernmental bodies like the World Water Council in that case, as pointed out by Biswas[25] which may be interpreted as the strengthening of non-(inter)governmental entities in declaring and disseminating their stances as well as in participating to the decision making process; and diversification of actors on issues related to water. Although such forums do not produce officially binding conclusions, they are important in that they exceed intergovernmental reunions to which participation is strictly limited to governmental officials; and instead, offer huge platforms for discussion and expression of all kinds of points of view: for instance more than 100 sessions during which a variety of aspects of water such as energy, poverty, dam building, biodiversity, etc. were held in The Hague (though there is an absence of documentation of these sessions).

Similar to The Hague Forum, during the International Conference on Freshwater held in Bonn on 3-7 December 2001 and hosted by The German government; representatives of various stakeholders charged with differing mandates, roles and responsibilities; including governmental officials of 118 countries (46 of which are ministers), 47 international organizations; and 73 from the private sector, non-governmental organizations, key groups like women, local and grassroots initiatives etc. convened with the purpose of exchanging ideas and reaching a consensus at the least common denominator[26]. The major discussions took place around the part of the private sector the role of which, in the Ministerial Declaration, is framed as a partner to the public bodies and civil society to improve governance while developing the implementation and management of

[25] Biswas, A., From Mar del Plata to Kyoto: An Analysis of Global Water Policy Dialogues, Centre for Education and Documentation, (2003), accessible at: http://www.doccentre.net/docsweb/water1/water-biswas.htm

[26] Catley – Carlton, M., The Bonn Keys, International Conference on Freshwater Bonn 2001, Conference Outcomes, p.7, accessible at: http://www.water-2001.de/outcome/reports/Brief_report_en.pdf

services to render water and sanitation services accessible to the poor[27]. Furthermore, private ownership of water resources is not welcome, and necessity to regulate and monitor private service providers is underlined[28]. Since the private sector, by definition, aims at maximization of profit; is unlikely to be willing to invest in shanty towns of rural areas where the majority of poor people live, and these are the sections which need urgent intervention with financial concerns put aside. The private sector's (and the market mechanism's) potential to contribute is also recognized as regards technology transfer and dissemination; and implementation of various public-private partnership models is supported[29] depending on the political, social, economical and environmental characteristics of the countries, cities etc. in question. Ensuring the protection of legal and financial interests of private firms during the whole period covered by the contract as well as their investment recovery; and providing additional support -from the part of stakeholders and the international community besides governmental bodies- where no previous successful private sector involvement case has been experienced, are among the recommendations of the Conference. "This implies appropriate regulatory arrangements, transparent contracting procedures, reliable cost recovery mechanisms, and public acceptance of such arrangements"[30].

Another point that draws attention is, as stated in the Ministerial Declaration, "Water is an economic and a social good, and should be allocated first to satisfy basic human needs"[31]. The major implication of this statement lies in the prioritization of human consumption of water over other uses such as irrigation and industrial uses etc.

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[27] Ministerial Declaration, International Conference on Freshwater Bonn 2001, available at: http://www.water-2001.de/outcome/MinistersDeclaration/Ministerial_Declaration.pdf

[28] Ibid.

[29] Ibid.

[30] Bonn Recommendations for Action, International Conference on Freshwater Bonn 2001, p. 8, accessible at: http://www.water-2001.de/outcome/BonnRecommendations/Bonn_Recommendations.pdf

[31] Ibid, p.7

Then comes to the forefront concerns over equity so as to provide water and sanitation services to the poor, and environment: "Water should be equitably and sustainably allocated, firstly to basic human needs and then to the functioning of ecosystems and different economic uses including food security"[32]. This statement is strengthened by identifying the provision of water security as a key of poverty reduction. These lines render it possible to deduce that the perception of human needs of water will take precedence vis-à-vis the economic uses, which may further lead to a possible opposition from, for instance the agricultural sector using around three quarters of water available.

Among the objectives of the Bonn Conference may be stated providing a preparatory platform for the World Summit on Sustainable Development in Johannesburg to take place two years later. Also, the WSSD is recommended to combine water issue with the sustainable development goals. Accordingly, a set of *Recommendations for Actions* classifying priorities under three headings; governance, mobilization of financial resources and capacity building and sharing knowledge was formed. Concerning the governance; ensuring the delivery of water services and infrastructures to the poor, securing equitable access to water for all people, promoting gender equity, allocating water among competing demands –among which is stated the environment as was the case with the Dublin Principle, sharing benefits via regional cooperation and long terms commitments with the development of necessary mechanisms, promoting participatory sharing of benefits from large projects, preventing corruption, managing water at the lowest possible level, and protecting the environment are mentioned. Suggestions for the mobilization of financial resources insist on the enhancement of public funding for water related services through a set of measures such as macro economic growth and issuance of government bonds. Progressive pricing is suggested in order to make sure that the sections of the society deprived of means to afford water services benefit from these services, and accordingly, full cost pricing for customers who can afford is advised so as to let the service provider

[32] Ibid, p.3

needs less compensation through public funds. Private and international community funds should also be augmented in order to reach the necessary level of investment in the sector. In the field of capacity building and knowledge sharing, priority is accorded to education and training both formally and informally through all possible means such as non governmental organizations, media, trade unions, etc., sharing knowledge and innovative technologies, and making water institutions more effective. The general atmosphere of these recommendations and the *Bonn Keys* is a cooperative and integrative one where all kinds of stakeholders are tried to be assembled and connected; from communities to local governments to private companies.

The next step to be mentioned is the World Summit on Sustainable Development (WSSD) of 26 August – 4 September 2002 organized by the United Nations, and during which water is treated under the heading of 'Ensuring Environmental Sustainability' or the Goal 7. The Plan of Implementation of the World Summit on Sustainable Development identifies 2005 as the year by which states are to develop their integrated water resources management and water efficiency strategies, plans[33] etc. It also underlines that countries with developing and transition economies will be supported during that process. In addition to that, adherence to the Millennium Development Goals declared by the United Nations in September 2000, the target (relating to water) of which is to "(H)alve, by 2015, the proportion of people without sustainable access to safe drinking water"[34] is confirmed. However, due to opposition raised by countries like United States, Japan, Australia, and New Zealand, etc., no new targets have been précised regarding the issue of sanitation; instead a vague language is employed according to which conditions of sanitation will be improved[35]. Basically, the principles,

[33] Plan of Implementation of the World Summit on Sustainable Development, United Nations, Johannesburg, (2002), available at: http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf

[34] The share of people using drinking water from improved sources is on a rising trend in the developing world; the rate rose from 71% in 1990 to 80% in 2004. United Nations, The Millennium Development Goals Report, (2006), p. 18, accessible at: http://mdgs.un.org/unsd/mdg/Resources/Static/Products/Progress2006/MDGReport2006.pdf

suggestions, priorities etc. of the Bonn Conference are adopted and rendered –somehow- binding for states; however, the language employed in the United Nations General Assembly Resolution[36], only "(U)rges Governments … to take timely actions to ensure the effective implementation of and follow-up to the Johannesburg Declaration on Sustainable Development and the Johannesburg Plan of Implementation".

As regards the success, failure and potential of the Summit (and the Declaration) to influence the worldwide approach towards practices of IWRM, there are differing opinions. The European Union evaluates the event as a success, as revealed in the words of Anders Fogh Rasmussen, the Danish Prime Minister holding then the EU Presidency, *"I believe we can be satisfied with the result. We have agreed an action plan and a set of principles for sustainable development…The EU has played a leading role in this"*[37].Kofi Annan, the then-UN Secretary General, adopts a positive stance towards expectations from such conferences: "We invited the leaders of the world to come here and commit themselves ... Johannesburg is a beginning. I am not saying Johannesburg is the end of it. It is a beginning"[38]; yet he remains cautious: "I think we have to be careful not to expect conferences like this to produce miracles. But we do expect conferences like this to generate political commitment, momentum and energy for the attainment of the goals"[39]. It must be added that the non participation of the American delegation –except a brief appearance of the Secretary of State Colin

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[35] Sharma, A., Mahapatra, R., Polycarp, C., Dialogue of the Deaf, Down To Earth, p.29, (2002) Accessible at: http://www.rio10.dk/upload/att/part2.pdf

[36] The United Nations General Assembly, Resolution A/RES/57/253, (2003), accessible at: http://daccessdds.un.org/doc/UNDOC/GEN/N02/556/06/PDF/N0255606.pdf?OpenElement

[37] The Official Web Page of the European Union, Summary: September 16, 2002 : The World Summit on Sustainable Development, (2002), accessible at: http://www.europa-eu-un.org/articles/en/article_1611_en.htm

[38] The Official Web Site of the United Nations, The Johannesburg Summit 2002, (2002), accessible at: http://www.un.org/jsummit/html/whats_new/feature_story41.html

[39] Ibid.

Powell who described the Summit as a "successful effort" towards the end- has rendered the event partially impotent.

Among those who are not satisfied with the content and the organization itself were the chiefs of developing countries, like Mugabe[40], the President of Zimbabwe, according to whom the Summit is marked by "corporate interests of the developed world", and that "(T)he focus is profit, not the poor, the process is globalisation, not sustainable development, while the objective is exploitation, not liberation". Besides, NGOs are unsatisfied with the products of the Summit as well as the organizational deficiencies among which are stated the long distance between the locations where formal negotiations and the Civil Society Global Forum took place as well as the luxurious treats contrasting the poor livelihoods just a few miles away[41]. Civil society representatives were also critical of the fact that the majority of negotiations took place in sessions open to governmental officials only, and the obligation related to accreditation posing financial burden for small-scale NGOs, since the principle of "participatory approach" was damaged. Still, more than 22,000 people participated in WSSD, of whom more than 10,000 were delegates, 8,000 were NGOs and representatives of civil society, and 4,000 were members of the press[42].

One other development regarding water is the proclamation of the year 2003 as the International Year of Freshwater by the United Nations on December 12th, 2002[43] with the objective of raising awareness and inciting governments, NGOs, private sector, together with the United Nation system to contribute to sustainable

[40] Mugabe, R. G., Zimbabwe Statement by His Excellency the President of Zimbabwe on the Occasion of the World ummit on Sustainable Development, (2002), accessible at: http://www.un.org/events/wssd/statements/zimbabweE.htm

[41] Malos, A., WSSD Success or Failure?,Web Site of the Global Policy Forum, (2002), accessible at: http://globalpolicy.igc.org/ngos/ngo-un/access/2002/10wssd.htm

[42] Seen in Bond, P., When Commodification Annuls the Right to Water, Water For People Network, (2007), accessible at: http://w4pn.org/index2.php?option=com_content&do_pdf=1&id=43

[43] UNESCO in Action: The International Year of Freshwater 2003, p.2, Accessible at: http://unesdoc.unesco.org/images/0013/001335/133510e.pdf

management, use and protection of freshwater. As stated by Kofi Annan, the then Secretary General of the United Nations,

> "Water is likely to become a growing source of Freshwater tension and fierce competition between nations, if present trends continue, but it can also be a catalyst for co-operation. The International Year of Freshwater can play a vital role in generating the action needed – not only by governments but also by civil society, communities, the business sector and individuals all over the world"[44].

The Third World Water Forum took place the following year between 16th - 23rd March in Japan in three different cities: Kyoto, Osaka and Shiga, all belonging to the basin of Yodo River and Lake Biwa, reflecting the logic of treating water management on a basin-wide basis[45]. The Ministerial Declaration, in addition to embracing the IWRM concept in line with the previous declarations, adopts a mixed model of management approach according to which private and public bodies will be partners with the latter ones "ensuring the necessary public control and legal frameworks to protect the public interests"[46]. The Board of Governors is composed mostly of representatives of the private sector and to a less degree the public sector[47] among which for example Jean-Claude Gaudin, the mayor of Marseille is a striking example since in the year 2000, 56.6% of the operating budget of the WWC was covered by the subsidy provided by the Marseille municipality[48]. Besides proving the pro-private sector approach of the municipality, this incident is interesting since the public funds are employed to finance the WWC.

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[44] UNESCO, World Water Development Report, Berghan Books, Paris, (2006), accessible at: http://unesdoc.unesco.org/images/0014/001454/145405E.pdf

[45] World Water Forum, Analysis of the Third World Water Forum, (2003), p. 29 accessible at: http://www.worldwatercouncil.org/fileadmin/wwc/Library/Publications_and_reports/analysis_3wwf.pdf

[46] Ministerial Declaration, Message from the Lake Biwa and Yodo River Basin, (2003), available at: http://www.worldwaterforum4.org.mx/uploads/TBL_DOCS_17_29.pdf

[47] See the web page of the World Water Council fort he full list of the Board of Governors accessible at: http://www.worldwatercouncil.org/fileadmin/wwc/News/WWC_News/News_2003/PR_new_board_30.10.03.pdf

[48] Martin, J., La Société des Eaux de Marseille au Début des Années 2000, (2004), The Web Page of ATTAC, accessible at: http://www.local.attac.org/marseille/article.php3?id_article=85

The Declaration mentions only ambiguously its stance related to cost recovery: "Funds should be raised by adopting cost recovery approaches which suit local climatic, environmental and social conditions and the "polluter-pays" principle, with due consideration to the poor"[49]. In addition to that, the emphasis on the protection of the interests of poor sections of the society is illustrated in the paragraphs related to sustainable development and eradication of poverty, good governance and equity, public-private partnerships, and improvement of the water and sanitation services in both rural and urban areas; however, water is not recognized as a human right.

When the Camdessus Report, named after Michel Camdessus –the former managing director of the International Monetary Fund-, and presented at the Forum following a panel of eighteen months, is evaluated, it can be seen that despite the jargon employing public-private partnership, there is a strong support for the entry and stay of the private sector in the business, insomuch as that the whole report is written from a business perspective where the reliance of most water undertakings on public subsidies -due to the absence of full-cost recovery- is identified as a "precarious existence" which "makes them the victims of periodic budgetary crises"[50]. With the admission of failure of "some cases", it is argued that "(M)ost private operations have achieved real progress in efficiency and, when required by the authorities and as part of their contracts, affordably served poor suburbs"[51]. In line with the previous statements (and the World Bank language), measures such as making and implementation of corporate laws permitting the structure of corporate vehicles as well as adequate investment protection laws, the genesis of and respect to the concept of freedom of contract

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[49] Ministerial Declaration, Message from the Lake Biwa and Yodo River Basin, p.2, (2003), available at: http://www.worldwaterforum4.org.mx/uploads/TBL_DOCS_17_29.pdf

[50] Camdessus, M., Report of the World Panel on Financing Water Infrastructure Financing Water For All, World Water Council, (2003), p.10, available at: http://www.worldwatercouncil.org/fileadmin/wwc/Library/Publications_and_reports/CamdessusSummary.pdf

[51] Ibid., p. 7

for a project and the enforceability of commercial contracts are suggested in order to attract private capital into the sector with the presumption that the private sector is likely to boost investments. Interestingly, the impact of increased fees (which will allow full-cost recovery) on the society are constantly ignored.

In accordance with the expectations rising from the fact of the Declaration being produced at the intergovernmental level, it presents nothing more than a general framework of the principles to be adhered to during the process of managing water; and foresees no global mechanism to monitor the progress achieved in solving water related problems[52]. Besides, it is largely criticized for not furthering the results already achieved in the World Summit of Sustainable Development of the previous year, for not making any commitments to take action and thus, for not having set any concrete targets, some of which have been mentioned in the previous paragraphs. In line with this line of criticism, the Declaration is also assessed to be inadequate in terms of reflecting the content of discussions during sessions on environmental (such as environmental flows) and social (like compensation of the upstream poor) issues related to increasing water supply and sanitation facilities.

Another outcome of the Forum, the Portfolio of Water Actions, released following the Interministerial Conference, a collection of obligations undertaken voluntarily by governments and other entities, and

> "identifying 501 projects being tackled by 43 countries and 18 international organizations, and a network of websites established at the conference began operation in May under the provisional directorship of the Government of Japan, with the goal of accelerating the speed with which each water-related action was being pursued"[53].

Thus, the documentation of the progress will be conceived and open to all stakeholders, so as to create a kind of soft control on the actors to stay loyal to

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[52] Macan-Markar, M., Environment: Declaration on Water Lacks Clear Programme of Action, (2003), accessible at: http://www.chasque.net/ips_eng/notas/2003/03/23/13:43:3.html
[53] Mizukami, M., Statement by Mr. Masashi Mizukami Permanent Mission of Japan to the United Nations, (2003), available at: http://www.mofa.jp/announce/speech/un0310-13.html

their commitments. Besides, an environment promoting international cooperation and information exchange is aimed to be enhanced.

While some argue that the Forum is not likely to have any impact on the actions of governments following the event despite some 24,000 participants from 182 countries[54] and 351 sessions on 38 water related issues[55] like Biswas[56], others qualify it as a big success to have assembled such number of people, and to have brought together water ministers and multiple stakeholders from around the world under the initiative of Multi-Stakeholder Dialogue (MSD) for the first time in water history[57] implying a large basis for international cooperation between various entities.

The last step to be underlined is the Fourth World Water Forum held in Mexico City between 16th – 21st March, 2006 and titled: "Local Actions for a Global Challenge" implying both the transnational character of the issue and its potential to affect daily lives of individuals together with the necessity of developing, among others, community-based and participatory responses to challenges related to water management and consciousness to influence the making of water policies. The Ministerial Declaration concentrates mainly on capacity building, need for local and governmental authorities to cooperate with the aim of increasing access to water supply and basic sanitation facilities, and announces its recognition of the Ministerial Declaration of The Third World Water Forum, the Millennium Development Goals as well as the 13th session of the United Nations

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[54] The United Nations Industrial Development Organization, UNIDO at the World Water Forum, (2003) Accessible at: http://www.unido.org/en/doc/10706#story1

[55] Web Page of the Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety, Water Management: 3rd World Water Forum from 16 - 23 March in Japan, (2004), http://www.bmu.de/english/water_management/doc/6158.php

[56] Biswas, A., From Mar del Plata to Kyoto: An Analysis of Global Water Policy Dialogues, Centre for Education and Documentation, (2003), accessible at: http://www.doccentre.net/docsweb/water1/water-biswas.htm

[57] Rahaman M.M., Varis O., Integrated water resources management: evolution, prospects and future challenges, Helsinki University of Technology Water Resources Laboratory, accessed at: http://ejournal.nbii.org/archives/vol1iss1/0407-03.rahaman.html

Commission on Sustainable Development (CSD - 13). The key message is the necessity to adopt and implement a multi-stakeholder approach where water will be managed at the lowest authoritative level and as close to the citizen as possible[58]. In the joint declaration of Venezuela, Uruguay and Bolivia and Cuba[59], access to water taking into consideration the quality, quantity and equity aspects is referred to as a fundamental human right and commodification of water is strongly rejected. All countries are invited to construct a World Water Forum within the international multilateral system on the principles of full participation and inclusion[60].

Apart from that, the Ministerial Declaration (in fact, the Ministerial Declarations of these forums in general) is criticized to be prepared in a non-inclusive and non-transparent manner. The demands of various NGOs, among which the World Development Movement[61] takes place for example, such as the recognition of water as a basic human right or acknowledgement that the privatization attempts have mostly failed to improve water services, was not mentioned in the Declaration. New approaches regarding conditionality, related to privatization of water services in this case, imposed by international donors were neither developed nor suggested. This situation is far from being a surprise given the pro-private sector stance of the World Water Council. For example, Loïc Fauchon, the President, serves also as the President of the Marseilles Water Supply Company (SEM) which is a subsidiary of the Suez Group and the Veolia Environment[62].

[58] Stockholm International Water Institute, Local Actions For A Global Challenge, (2006), accessible at: http://www.siwi.org/downloads/WF%20Articles/WF4-05_4th_WWForumpdf.pdf

[59] Declaracion Complementaria en el Marco del IV Foro Mundial del Agua,, (2006), accessible at: http://www.worldwatercouncil.org/fileadmin/wwc/Library/Official_Declarations/Declaraci_n_Bolivia__Cuba__Uruguay_y_Venezuela_IVFMA1.pdf

[60] Given the anti-American stance of the concerned countries and their associated reaction towards neoliberalism, which is likely to lead to situations incompatible with human dignity when 'water' is in question, there is no surprise in the content and philosophy of their declaration.

[61] World Development Movement, Special Briefing: 4th World Water Forum – Mexico 2006, (2006), p. 3, Accessible at: http://www.wdm.org.uk/resources/briefings/water/wwfbriefing01032006.pdf

[62] See the web page of the World Water Council fort he full list of the Board of Governors accessible at:

However, the fact that the word "privatization" was not used in the writing of the Declaration can be interpreted to be resulting from the mass protestations that took place against the privatization of water. The role of the private sector is limited to that of a stakeholder among others (like intergovernmental organizations, scientific institutions, nongovernmental organizations, partnerships etc.) as a part of the coordinated participation to and involvement in the Forum.

The concept of IWRM has increased its weight during the course of these world-wide conferences as the proposed solution vis-à-vis the water crisis revealed, among other indicators, by the loss of 6,000 lives –of mostly children under five- each day due to diseases stemming from problems related to water like lack of sanitation, malnutrition, poverty, etc. Since the crisis is assessed by many to be originating from the management reasons, this flexible concept combining aspects of water such as human health, development, production, infrastructure, environment, institutions, participation, private sector etc. can be employed to ameliorate the current world water situation. With the aim of concretizing the content and implications of the IWRM concept, the next chapter will focus on the explanation and discussion of the concept through a wide range of definitions as well as its strengths and weaknesses.

http://www.worldwatercouncil.org/fileadmin/wwc/News/WWC_News/News_2003/PR_new_board_30.10.03.pdf

CHAPTER 3

THE CONCEPT OF IWRM *PER SE:* APPLICABLE TO WHAT DEGREE?

The Global Water Partnership defines the concept of integrated water resources management (IWRM) as:

> "a process which promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems"[63].

The Food and Agriculture Organization of the United Nations points at the integration of all levels to the process, in other words, participation:

> "(I)ntegrated water resources management (IWRM) refers to allocating and managing water among all sectors and *at all levels*, based on the underpinning idea of the *integration* of all sectors that impinge on a given water resource in the process of water resources management"[64].

Van Hofwegen and Jaspers identify the concept, underlining the setting and enforcement of norms, as follows:

> "IWRM is a process of assignment of functions to water systems, the setting of norms, enforcement (policing) and management. It includes gathering information, analysis of physical and socioeconomic processes, weighing of interests and decision making related to availability, development and use of water"[65].

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[63] Jonch – Clausen, T., Integrated Water Resources Management and (IWRM) and Water Efficiency Plans by 2005: Why, What and How?", Global Water Partnership, (2004), available at: http://www.gwpforum.org/gwp/library/TEC%2010.pdf

[64] Sokile, C. S., Hermans, L. M., Van Halsema, G. E., Mahoo, H. F., Tackling Dilemmas For The Shared Use of Water Resources: Moving Towards IWRM in the Mkoji Sub-Catchment, Tanzania, South Africa, (2004), available at: ftp://ftp.fao.org/agl/emailconf/wfe2005/dilemmas_IWRM_Mkoji.pdf

[65] Seen in Moriarty, P., Butterworth, J., Batchelor, C., Integrated Water Resources Management and the Domestic Water and Sanitation Sub-Sector, IRC International Water and Sanitation

As may be deduced from these definitions, the IWRM model is intended to embrace the three aspects of water management: social, economic and environmental. Besides, participation of all kinds of relevant actors, which means every individual since water is in question, to the process of management to water is encouraged; from households to farmers to academics, communities, NGOs, governmental organizations etc. In addition to the assertion of pluralism in the decision and policy making process, this wide-scale participation provides the advantage of creating a self-regulatory environment where the stakeholders will appropriate the process much more effectively than any control coming from the governmental agencies. Furthermore, reaching a consensus among stakeholders will be fostering this process. In cases where consensus is not reached; mechanisms like arbitration or conflict resolution will enter the scene so as to provide a basic agreement. Another aspect of participation is the inclusion of marginalized groups like women (as a reflection of the most of the developing world) in the process to ensure that they acquire gains otherwise they will not be able to. Steps from the side of various actors must be taken to enhance the widest possible participation and representation of interests.

Principles adopted in the Dublin Conference construct the basis for today's IWRM approach, except the aforementioned controversial perception of water as an economic good. Recognition of the water as a finite source is important in the sense of raising awareness that the presence and quality of water are not assets to be taken for granted; they are threatened by human-created factors like pollution coming from industrial development and population increase, and water withdrawals that have augmented twice as much as population[66].

Centre, (2004), p. 6, available at: http://www.irc.nl/content/download/11479/168383/file/IWRM_Final_.pdf

[66] Official Website of Cap-Net, Capacity Building Network for Integrated Water Resources Management, Tutorial On Basic Principles of Integrated Water Resources Management, available at: http://www.cap-net.org/iwrm_tutorial/other/tutorialtext.doc

On the other hand, the origin of the problem is identified to be related to management of water or governance exposed in forms of "corruption, lack of appropriate institutions, bureaucratic inertia and a shortage of investment in both human capacity and physical infrastructure"[67] as well as bureaucratic resistance to change rather than its quantity. Put differently, IWRM with its attribute –not limited to- of managing "water demand and usage through increased awareness, education and water policy reforms[68]" is suggested as the solution. 'Integrated' refers to the consideration, inter alia, of all sectors, resources and stakeholders of water during the process of decision making and implementation.

Another aspect of the concept is to "… tackle some of the root causes of this management crisis, namely the inefficiencies and conflicts that arise from uncoordinated development and use of water resources"[69]. In other words, rather than fragmented and sectoral approaches, coordinated and holistic approaches are to be adopted in order to pressurize inefficient, uncoordinated and institutionally top-down (thus questionable in terms of legitimacy) management of water resources. Accordingly, one of the main motives lying underneath the "integration" component is to achieve the ideal allocation of water resources between and among different users and uses in an increasingly competitive, hence conflict-prone, environment subject to decreasing quantity and degrading quality of water. So long as the situation remained otherwise, the government officials were endowed with the luxury of adopting and implementing sectoral (or subsectoral) approaches that resulted, according to the neo-liberal proponents of IWRM, in increased conflicts over this scarce resource, its inefficient use

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[67] United Nations Educational, Scientific and Cultural Organization, Water A Shared Responsilibity The United Nations World Water Development Report 2, Executive Summary, p.44, United Nations World Water Assessment Programme, UNESCO, Berghan Books, (2006), accessible at: http://unesdoc.unesco.org/images/0014/001444/144409E.pdf

[68] Ibid.

[69] Smits, S., Bustamente, R., Butterworth, J., Integrated Water Resources Management at the Local Level: The Role of the Local Government, http://www.iclei-europe.org/fileadmin/user_upload/logowater/resources/Local_govt_and_IWRM_Smits-Bustamante-Butterworth.pdf

(hoarding, put differently), depletion and deteriorating quality[70] due to a variety of reasons like industrial discharge, salty water intrusion, human wastes etc. More concretely, IWRM is concerned with the amount of water in a certain watershed will be allocated to, for instance irrigation of which crops, how much will be accorded to water and sanitation, how much to ecosystems etc[71].

Among the criticisms oriented toward the concept of IWRM, those of Asit Biswas[72] target the very definition formulated by the Global Water Partnership alleging that although the definition seems to be an all-inclusive and impressive one at the first reading, "it really is unusable, or unimplementable in operational terms"[73]. More concretely, it offers neither suggestions nor methods to make water management, planning and decision-making processes more efficient and more rational. Moreover, the definitional deficiencies leading to operational difficulties give rise to measurement problems regarding the compatibility of the theory and the practice. In addition to that, there is a lack of parameters indicating the degree and trend of "integrated"ness of a resource system.

Butterworth and Soussan[74] move along similar lines and argue that the IWRM concept is too complicated since starting its realization demands meeting of various challenges. Secondly, they underline the lack of consensus on the meaning of IWRM and classify two main approaches; one viewing the concept as

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[70] Garcia, L. E., Corredor, J. M., Nolet, G., Echeverria, R., Figureoa, E., Fortin, C. J., Lemay, M., Millan, J., Quiroa, R., Tuazon, R., Vaughan, W., Strategy For Integrated Water Resources Management, p.4, Inter-American Development Bank, Washington, (1998), accessible at: http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=351883

[71] Ibid.

[72] Biswas, A. K., Integrated Water Resources Management: A Reassessment, Heinrich Böll Stiftung, (2004), accessible at: http://www.menschen-recht-wasser.de/downloads/Integrated_Water_Resources_Management.pdf

[73] Ibid., p.6

[74] Butterworth, J., Soussan, J., Water Supply and Sanitation and Integrated Water Resources Management: Why Seek Better Integration?, WHIRL Project Working Paper, (2001), accessible at: http://www.nri.org/WSS-IWRM/Reports/Working_papers/WHIRL%20working%20paper%202_final.pdf

an "expert control system" where all aspects of water resources supply and use are to be integrated within a centralized planning system often materialized as command of one 'super agency'[75]; and the other identifying IWRM as a way of thinking "where no attempt is made to control all aspects of water management through one system, but rather the challenge is seen as helping many different water managers to understand and take account of the wider implications of their actions"[76]. Their third objection is related to the long term vision of IWRM hence its incapability to provide immediate and practical solutions for situations of urgency.

These criticisms are not unfounded on practical grounds since the process of integration aiming at the inclusion of multiple sectors, policies and stakeholders into the management of water render the situation even more complex. The question of the choice of the sector(s) to be prioritized is problematic given the wide range of topics related to water: in case developmental goals take precedence, the main concern will be energy, agriculture, and industry etc. while emphasis will be accorded to education, environment and health in case social issues will be focused on.

As regards the economic value of water; this depends on the value accorded to alternative uses of water and its resulting allocation as a scarce resource through economic or regulatory means. Precising a price and charging for water is in theory the application of an economic instrument which can encourage certain uses while discouraging others (i.e. managing demand), or act as a stimulus to service providers having the capacity to increase or decrease investments.

This is the point where comes into the picture privatization of water utilities necessitating the strike of the right balance between attracting corporate attention to the sector and societal and equity concerns.

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[75] Ibid. p.9

[76] Ibid. p.9

Pursuit of monopoly prices to be charged by companies is likely to oblige people to quit the infrastructural system when their payment capacity is exceeded. However, the World Bank adopts a different view according to which 'the poor are willing and have the capacity to pay for services that are adapted to their needs… poor performance of a number of public utilities is rooted in a policy of repressed tariffs' as declared together with African Water Utilities Partnership in the Kampala Statement in 2001[77].

The economic theory suggests that while average cost pricing (where they break even) allows utilities to recover their costs, long run marginal cost pricing reflects the efficient allocation of resources under the condition of perfect competition which can be "reached no matter who pays for the fixed costs of water supply, even if they are subsidized[78].

[77] Seen in Bond, P., When Commodification Annuls the Right to Water, Water For People Network, (2007), accessible at: http://w4pn.org/index2.php?option=com_content&do_pdf=1&id=43

[78] Policy Research Initiative Synthesis Report, Economic Instruments for Water Demand Management in an Integrated Water Resources Management Framework, (2004), Accessible a: http://policyresearch.gc.ca/doclib/WaterSymposium_e.pdf

CHAPTER 4

WATER MARKETS: A THEORETICAL FRAMEWORK

One of the key components of IWRM is the economic value accorded to water paving the way for the adoption and implementation of the private sector rationale and resulting in its commodification. In more practical terms, markets for water where pricing is effectuated have been established in which private actors possessing varying degrees of effectiveness and power as well as public bodies formed and functioning depending on a large set of principles, norms and structures like the long term state policy, legislation, traditions etc. are determinant.

The process of commodification of water is executed through three instruments: privatization, pricing and markets. After a theoretical chapter on the functioning of water markets and pricing, Murray-Darling Basin and Limari Basin examples are treated in this thesis as *successful* examples of IWRM in place in two countries of differing levels of development.

4.1 Water as Commodity: From Social to Economic Good?

Water utilities have been traditionally provided by the public sector due to the per se qualities of water. As other infrastructure services, water utilities have the characteristics of natural monopolies in which exploitation of economies of scale is important; high possibility of sunk costs and fixed costs in the form of network delivery systems set physical barriers to entry; and potential for abusive pricing is high. Besides these economic reasons, societal well being which necessitates avoiding under-provision of such services is taken into account; externalities such as poor public health and reduced productivity are aimed to be prevented; and the

government may prefer to render these services available free of charge (or at reduced fees).

However, a major theoretical shift in academics and policy makers according to which many infrastructure goods are closer to private goods came into being and spread, thus, the economic aspect of the issue started to be emphasized. For example, water scarcity (especially in dry seasons) might render water service rivalrous. Also, industries exhibiting natural monopoly characteristics on the surface could be restructured via vertical unbundling (i.e. seperation of various steps inherent in the industry) in order to introduce competition, and hence incentives for high performance and fair treatment of customers could be supported.

4.1.1 Properties of Water

That degree of interrogation of water markets is due to the properties of water. Water is essential, scarce, fugitive, public, non-substitutable, incurs high production and transaction costs and it is a complex good in the sense that it is location bound and crosses administrative boundaries, its demand market comprises different categories of users, macroeconomic interdependencies are inherent between water using activities, threat of market failures exist in its supply, and it is accorded a high merit value related to our perception of beauty, well-being and health.

4.1.2 Integrating Economics into "Water": Some Concepts Related to the Water Supply Industry

The goal of water markets is to **optimize welfare** and achieve both an efficient allocation of resources and social efficiency. While doing this, a **cost/benefit** analysis has to be done; the problem of financing large projects with scarce resources has been replaced by that of scarce water. **Externality** evaluation (protecting and accounting for third party effects and instream uses) is another

aspect. Inclusion of **externalities** will have an impact on the selection of new water resources, on the extension of existing supply sources and on utility costs and prices. Economic efficiency requires that marginal, not average costs be used to **price water**. And consumers pay directly their fees. However, this economic suggestion may not be hold for social considerations. **Private** sector seeks to charge a commercial rate and is reluctant to invest in regions that lack reliable political and legal system for protecting private ownership.

Structure of the industry is characterized by a mature technology in which innovation advances slowly and existence of monopolies precluding competition Another aspect is that water systems are either private and regulated OR run directly as part of a governmental structure.
Due to its properties, regulation is exercised in the sense of controlling entries into the industry, fixation of prices either by the regulatory or government agency, and obligation of regulated firms to serve all applicants under reasonable condition.

The unique features of the industry are capital intensity of operations, capacity added in large increments that results in excess capacity, high fixed costs compared to variable costs, inelastic as well as unstable demand which forces to add 50% to the capacity for peak demands, and easiness to store difficulty to transport compared to electricity.

4.2 Water Markets: Does Commercialization Provide An Improved Management of Water?

4.2.1 Water Markets as Institutions

In its most basic definition, a water market is an arrangement in which holders of water rights trade them with each other or to outside parties depending on the prevailing hydrological regime, including whether trades involve surface water, groundwater, or both; the previous existence of informal water rights and trading; the types and numbers of water users and right holders, including whether all are

irrigation farmers or from different water-use sectors; and the physical arrangements for moving water between users. However, appropriate institutional arrangements must be in place to ensure positive outcomes from water markets.[79]

Another definition for water markets is that it is an institution, a system in which users are assigned property rights to ground water. It is also an institution of water management whereby the community has developed rules about who gets how much irrigation water when and for how long is another form of an institution. They all consist of rules that define the exchange of water[80].

4.2.2 Role of Water Markets

The main role of water markets is to reallocate water efficiently to higher valued uses though governments are by far those who allocate and reallocate water large quantities among users. Ex: New Mexico, Northern Colorado, Chile, Australia etc...

4.2.3 Conditions for Effective Markets and Water Pricing

A variety of conditions must be met for effective functioning of water markets. First of all, water rights or water use rights are well-established, quantified, and separate from land. In addition to that, organizational or management mechanisms must be in place to assure that the traded water reaches the new owner or owners. Also, the infrastructure for conveying water must be flexible enough for water to be rerouted to the new owner. Mechanisms must be in place to provide "reasonable" protection against damages caused by a water sale for parties not directly involved in the sale, and to resolve conflicts over water rights and changes

[79] Kemper, K., Markets for Tradable Water Rights, 2020 Focus 9 (Overcoming Water Scarcity and Quality Constraints), Brief 11 of 14, October 2001, available at www.ifpri.org/2020/focus/focus09/focus09

[80] Latham, C.J.K., Institutional Complexity and the Management of Water as a Common Pool Resource, presented at WaterNet/Warfsa Symposium 'Water Demand Management for Sustainable Development', Dar es Salaam, 30-31 October 2002, available at www.**water**netonline.ihe.nl/aboutWN/pdf/Latham.pdf

in water use. Another necessity is the need for registration of water rights. Finally, people must be well informed about water trading.

In order to correctly define and price water rights, it must be remembered that the existence of different costs associated with different users and uses of water which need to be included in social costs to allow a market to efficiently allocate limited water, renders recognition of these costs as characteristics of water property rights (water transport, evaporation etc)[81].

Three stages are involved in the use of water: the initial water product in a dam or aquifer, delivery of the water to the user, and use of the water including waste disposal. For many different potential users and uses of water the delivery and use stages include very different activities which incur different costs. In this case, the sector could be unbundled by establishing separate property rights for the primary water product, essentially at the dam or aquifer, a delivery right, and a use licence which seeks to internalise pollution costs associated with wastes.
In case of volatile rainfall levels and climate conditions, the simplest measure is to specify a single water entitlement as a share either of water released from the primary supply, or as a share of the net inflow. Another option is to specify one entitlement in volumetric terms with a high probability of availability, a high security entitlement, and then a second lower security entitlement for a share of the residual supply.

4.2.4 Water Markets: Why and Why Not?

4.2.4.1 Water Market Imperfections

As for all markets (especially of infrastructure utilities) there is always a potential for a monopoly to develop where an individual, or company, gains control over water resource which may result in higher prices and water diversions (for

[81] Productivity Commission, Water Rights Arrangements in Australia and Overseas: Annex A, Murray-Darling Basin, Commission Research Paper, 2003, available at www.pc.gov.au

farmers). For instance such a situation occurred in Chile when the monopoly company changed the timing of water releases and river flows which had an adverse effect in downstream irrigators. There is also a possibility of overdrafting groundwater because of offsite water users. Water markets may raise concern in a community regarding the possibility of transferring the community's "own" water to "outside" communities, especially in cases
where large quantities of water are traded to outside users.

4.2.4.2 Role of the Public Policy to Play

Public policy has roles to play in water management issues first via legislative and administrative instruments using measures that are imperative and leaving no choice for the regulated sector (this is as also called the *command-and-control approach*). Public authorities may also employ financial (price/fiscal) instruments through which the government aims to induce behavioral reactions that are environmentally benign. Via private regulatory instruments, the government merely creates the conditions for the actions of individuals or groups and promotes direct agreements or negotiations between them. Unlike the legislative/administrative instruments, they give the economic actors the choice of how to make arrangements. And finally, social instruments may not directly influence any change in behaviour, but they can persuade individuals, communities or corporations to behave in a certain manner, e.g. through extension, or information.

Experience with the Chilean system since its establishment in 1981 suggests some areas that could be further improved. On the regulatory side, there may need to be further provision for managing seasonal use to ensure minimum flows for public use and environmental protection. This could be done partly through public purchase of water rights, and more productively done by regulating seasonal use patterns, particularly of non-consumptive users, without overall reductions in private use rights. On the market side, efforts could be made to promote registration by small users of their traditional rights and to reduce transaction

costs for water rights trading, thus promoting further water rights transfers to more productive use. This may require further public and private investment in water distribution infrastructure to facilitate changes in water distribution.

4.2.4.3 Economic, Political, and Social Effects of Commercialization Water

Economically, a staggering increase in prices for water available through the privatized distribution system is likely to be observed, the increase in investments from the water corporation in spite of privatization is not guaranteed such as in Argentina when Vivendi Environment took over government-run water systems[82], and also concepts of profit maximization and water as a public necessity must be reconciled. Another risk is free water extraction right for water corporations which may engender both high prices and environmental degradation. These entire factors may culminate in the risk of deprivation of the society from secure supplies of water.

Commercialization of water could –disregarding the neoliberal economic rhetoric according to which "capital has no country"- become a tool of interference in the countries from which transnational water corporations originate as was the case between Singapore and Malaysia in the 1997[83]. Another effect is the denial of right to information, particularly to common citizens an example of which was experienced in Sydney in 1998 when the inappropriateness of water for drinking was discovered to be hidden from the public.

Increased unemployment, which is an inevitable corollary of any privatization process goes hand-in-hand with various negative social consequences such as a raise in the rate of crimes. Another effect is the increasing disconnections of water supply; due to

[82] Mohan, F., Water Tensions and Water Conflicts: "Merchandising Water" The Catalyst, 2002, available at www.networkideas.org/focus/sep2002/Water.pdf

[83] Ibid.

price hikes, the number of customers who have had their water disconnected has risen by 50 percent since privatization in Britain[84].

4.3 Types of Water Markets: Formal and Informal

The key difference between the two markets is the way in which the trade is enforced. If the users must self-enforce trades because no formal water rights exist that can be enforced through the legal or administrative system, the market is informal.

4.3.1 Formal Markets with the Legal Aspect

Formal water markets -in which constitutional, property rights rules, and contracts prevail- specify the volume and share of water to be sold, either for a set period of time or permanently. They are required to provide the certainty necessary for permanent water transfers or transactions between different sectors and jurisdictions. Formal water markets are likely to become more common due to the growth in nonagricultural demands for water since the need for permanent trades and interjurisdictional water exchanges amplify. Water markets in Western United States, Australia, Chile, Brazil etc. constitute examples for formal markets.

4.3.2 Informal Markets with the Practical Aspect

Informal markets (where norms and customs prevail) usually involve the sale of unmeasured flows of surface water from a canal for a set period of time or of water pumped from a well for a set number of hours. Although the units sold in informal markets may not be metered, both the buyer and the seller have good information about the volume transferred. These are generally groundwater markets that are important for agricultural production and the distribution of water especially in South Asia. These markets improve access to irrigation, especially for smaller-scale farmers who do not own tubewells and cannot afford to invest in

[84] Ibid.

a well without a market for their water. One of the risks of informal markets is overrating the occurrence of which is linked to the incentive that the farmers have to ignore the scarcity and buffer stock value of the groundwater and pump until their cost of pumping equals the market price of water Over time, the cost of pumping and the price of water rise as the groundwater level declines. In this case, the problem stems from the lack of exclusive property rights for groundwater as in the coastal areas of India and Pakistan[85].

4.4 Perspectives on Water Markets: Economic, Environmentalist and Equity Perspectives

4.4.1 Economic Perspective: The Orthodox Theory

A water right is a property right to the use of water under prescribed conditions including time, place and purpose. Three major elements of this perspective emphasize first of all the greater transferability implying a more efficient property rights structure, which in turn produces a more efficient resource allocation; secondly, the elimination of incentives to waste water created by subsidies to water users; and lastly the pricing of water, like any other good, on the marginal cost basis

4.4.2 Environmentalist Perspective

The environmentalist perspective on water markets underlines that reallocation and conservation of water reduce the need for environmentally damaging new water projects while bearing in mind the concern that higher water prices from water trading will lead to overpumping of groundwater causing salt water intrusion. Another contribution of the perspective comes from the "Third Way" of environmentalism which recognizes the compromise of purely environmentalist

[85] Dinar et al. Fromal and informal Markets for Water: Institutions, Peformance and Constraints, the World bank Research Observer, Vol. 14, No.1, 1999.
Also see The New Economy of Water, available at www.awra.org

ideals and economic health, thus presenting a shift from radical opposition to traditional economic interests to a bargaining and compromising attitude.

4.4.3 Equity Perspective

Provision of physical access to service, or service coverage across different communities with different income levels is central in this perspective that englobes the idea of quality (i.e., access to reliable, safe drinking water) as well. Another dimension is cost and affordability where the concepts of horizontal and vertical equity must be considered; and thirdly, equity in access to decision-making for the service, (i.e., democratic participation of service users in the decisions that affect them) must be assured.

CHAPTER 5

ANALYSIS OF DEVELOPED AND DEVELOPING COUNTRIES: AUSTRALIAN AND CHILEAN CASES

5.1 The Australian Case: Murray-Darling Basin

5.1.1 The Legal Framework

Until 1970, the water allocation system in Australia was rather primitive and far from capable of managing water efficiently. Water was a part of the land right and allocated on a first-come-first-serve basis, charge or marginal cost to users was close to zero. By 1970, the country was at the mature stage of water economy where demand (from the side of commercial users at nearly zero prices) exceeded supply in general. Competition between farmers and to a less extent between irrigators and other users was accompanied by perceptions, and then by formal analysis, that some potential new users placed higher marginal values on water than did existing users[86]. This property of the market left ample space for speculation which can produce damages in social and economic terms. There was also an increased awareness of the degrading quality of rivers and a pressure to maintain flows allocated for environmental flows.

The Council of Australian Governments' (CoAG) responded to this situation in form of declaring a Water Reform Framework in 1994 the goal of which was to improve the efficiency of the water industry and to address a range of environmental problems associated with the use of water. The Framework suggested the separation of water rights from land rights as well as setting of prices at least at levels covering operating costs of delivery. Some other

[86] Freebairn, J., Principles and Issues for Effective Australian Water Markets, Presented at IPA Conference,"Establishing Australian Water Markets", August 2004

propositions were the shifting of trading water from low value to higher value uses and recognition of the need to allocate water for environmental flows.

Another property of the Framework is that it is incorporated in the National Competition Policy (NCP) as a related reform in 1995[87]; meaning that progress with respect to water reform is assessed by the National Competition Council (NCC) and the outcomes of these assessments have direct implications concerning the level of NCP payments made by the Commonwealth to each jurisdiction. Thus all jurisdictions under fiscal pressure are held obliged to comply with and implement institutional reforms embodied in the 1994 agreement.

The National Water Initiative Agreement was entered in 2005 by most of the states (except Tasmania and Western Australia). It adopts that water planning has two broad purposes (resource security and ecological security); also productive as well as environmental and social benefit aspects should be taken into account while planning; and it provides that all temporary trade barriers within and between states should be removed by June 2005.

Another policy instrument is the National Water Management Quality Strategy (NWQMS) the objective of which is "to achieve sustainable use of the nation's water resources by protecting and enhancing their quality while maintaining economic and social development"[88]. The National Action Plan for Salinity and Water Quality (NAPSWQ) seeks to address salinity and water quality problems that have significant economic, social and environmental consequences and shapes funding, policy and regulatory frameworks as well as implementation.

[87] Productivity Commission (Melbourne), Water Rights and Arrangements in Australia and Overseas, Annex A, Murray-Darling Basin, Commission Research Paper, 2003

[88] Ibid.

5.1.2 Government Involvement

There are two basic instruments in the allocation of water for the government[89]: the Cap (1995) and the Living Murray Initiative (2001). The Cap policy was initiated as a measure setting the diversion limits from the basin's rivers which were to be determined by the infrastructure supplying the water; the rules for allocating water and for operating water management systems applying; and the operating efficiency of water management systems. Other principal criteria were the existence of and the extent to which entitlements to take and use water were used, and the trend in the level of demand for water.
The other instrument, The Living Murray Initiative was started in response to the deteriorating environmental conditions, which explains its focus of its broad objectives of river health, environmental flow, water quality, and human dimension (cultural values etc.)

It aims at realizing reallocation between consumptive and environmental uses through various mechanisms such as reallocating without compensation or assistance (which means reducing the volumetric entitlements or reliability of supply of water rights without compensation, or not renewing short-term water rights when they were due for renewal); reallocating with compensation or assistance (such as compulsory acquisition of access rights and the provision of structural assistance to irrigators following the closure of uneconomic irrigation areas), and market based mechanisms (such as voluntary acquisition of water rights through water markets, purchases of water through investments in water savings etc).

The MDBC is responsible for monitoring continuously the flow of the River Murray and its tributaries; the volume of water stored; all diversions, whether natural or artificial from the River Murray and its tributaries and the quality of River Murray, tributary and stored water.

[89] Government refers to the Murray-Darling Basin Ministerial Committee (MDBMC).

5.1.3 Environmental Flows

Calls for increased amounts of water to be allocated to environmental flows must bear in mind that the additional water allocated to environmental flows has opportunity costs of less water for irrigation, industry and households. The marginal social benefit provided by extra environmental flows could be compared with the market price of water traded between irrigators, industry and households after an assessment of the present allocation and flows (including dams, channels and seasonal flows), the changes to biodiversity, heritage, recreation and the other products provided by extra water for the environment, and the household valuations of the marginal benefits of changes in the biodiversity, heritage etc.;

5.2 Water Markets in Chile: The Limari Case

5.2.1 The Legal Framework: The Current Legislation

In the 1981 Water Code, all functions of the water authority *(Direccion Generale de Aguas, DGA)* are transferred to private sector which would have private and tradable water rights with almost not restrictions. No authorization is demanded for private owners who will transfer water rights from one use to other or to sell it to other party. Water quality is not included in the law. Land rights are separated from water rights, and two types of water rights are distinguished according to their categories of use: consumptive and non-consumptive. Holders of consumptive water rights (mostly farmers and urban water utilities) have no obligation to return used water to the river while holders of non-consumptive water rights (mostly power generating dams) are obliged to return the water to the river without degradation, allowing use by other users downstream. Downstream users do not have rights to return flows generated by an upstream user. This aspect is important because "not less than 70% of the water quantity is flowing

back to the river via surface or underground water[90]. Water rights cannot be traded between consumptive and non-consumptive users.

Concerning the water conflicts, the law provides that these be assigned to the regular judicial system which in practice causes long delays in resolving disputes.

Aside from the 1981 law that precises the conditions under which water markets work; concerning the environmental conditions, the Environmental Framework Law 1994 (EFL 1994) provides a general framework for environmental protection and is intended to serve as the basis for additional laws and regulations to be developed on specific environmental issues.

Besides, Natural Water Resources Policy adopted in 1999 addresses some of the problems resulting from the failure of existing legislation and regulation to efficiently allocate and protect water resources. With the aim of coping with these issues, the policy suggests payment of a fee on all water rights possessed but not used in order to discourage hoarding of non-consumptive rights. Another suggestion is the establishment of river basin-level water resource committees composed of government officials and users to coordinate the development of policies. This policy also views to ensure minimum environmental flows and modernization of information systems.

As regards irrigation; it is possible to cite two main laws: the Irrigation Law for Major Works (1981) that allows the state to subsidize the construction of major water development projects (such as storages and interbasin channels); and the Irrigation Law for Minor Works (1985) provides for the subsidization of private investments to construct and improve infrastructure.

The WC 1981 does not give the state the authority to charge for water — apart from auctioning new water rights when there are two or more simultaneous

[90] Hartje, V.; Gauer, K.; Urquiza, A.; The Use of Economic Instruments in the Environmental Policy of Chile; 1994, Deutsche Gesselschaft für Technische Zusammenarbeit, Division 402

applications for the same right, and the price of water rights is not subject to prices oversight by a regulatory agency in Chile

5.2.2 The Water Sector

5.2.2.1 Pricing Water Infrastructure Services

Although tariffs for urban infrastructure services are set to recover the costs of operating and maintenance (with provision of incentives for future investment being one of the aims), there is opaqueness as to whether this aim is materialized. Furthermore, capital costs are not fully recovered for irrigation assets. Another aspect of prices is that they reflect regional, demographic and technological differences.

5.2.2.2 Current Water Infrastructure

The Limarí-Paloma system represents the whole irrigation infrastructure in the Limari Valley and encloses the regulation of the waters for about 32,000 hectares. It includes reservoirs, riverbeds, canal systems and facilities. The whole regulated system can be divided into three subsystems: Recoleta, Cogotí and Paloma subsystems.

5.2.2.3 Crop Structure

Main agricultural activities are production of the traditional livestock and cultivation of horticulture (artichokes, peppers)**,** pisco grapes and avocados**,** **e**xport grapes

5.2.3 Administration of the Water Markets: Roles of Government Distributors, and Enforcement Agencies

Government is involved in reallocation of water by purchasing water rights. It is active also in resource assessment, setting objectives, impact assessment, transparency, consultation, and implementation of legislation.

Directorate General of Water (DGA) has the overall responsibility on the planning of water use. It regulates the extraction of water from natural waterways and water bodies, through the issue of water rights, approves the construction of water works, wells, transfers of rights, and maintains environmental flows.

The local Water User Associations manage and monitor water distribution and collect fees for construction, maintenance and administration of distribution channels. A user must be a member of a Water User Association in order to have registered water rights.

Another important institution is the National Irrigation Commission (CNR) which promotes and assists the construction of smaller private irrigation infrastructure. And finally, there is the Directorate of Irrigation that is responsible for the conduct of technical and economic studies of irrigation projects.

CHAPTER 6

ANALYSIS OF AUSTRALIAN AND CHILEAN EXPERIENCES

6.1 The Australian Experience

6.1.1 The Overall Change in the Country

Although water trading officially began towards the end 1990's (South Australia in 1988, Victoria in 1989, New South Wales in 1990) in Australia, water markets are still in the infancy phase due to the evolving needs they have to tackle; however, it must also be kept in mind that Australian water markets are among the best functioning markets worldwide. They, with the correct employment of market mechanisms, contribute to the efficient allocation of water resources; and since Australia is among the developed countries with a GDP per capita level of $30,700[91] in real terms, water pricing does not create the results it does in developing countries for poor sections of the society. The Australian Bureau of Agricultural and Resource Economics estimates that increased use of water in the Murray Darling Basin will boost the output by around $48 million annually[92] thanks to the resulting irrigation and trade possibilities.

Concerning the legislation on separation of water rights from land rights, McKay et al. (2001)[93] state that the expectations related to a promoted efficiency in the management of water rights (by the right holders) and an engagement of landlords in permanent and temporary trade were not totally materialized, and only the

[91] Website of Central Intelligence Agency available at: http://www.cia.gov/cia/publications/factbook/fields/2004.html

[92] Website of Murray Darling Basin Commission available at: http://www.mdbc.gov.au

[93] McKay, J., Björnlumd, H.; Australian Water Market Mechanisms as Socially Just Environmental Policies, Social Justice Research, Vol. 14, No.4, (2001)

temporary market grew in Victoria, South Australia, and New South Wales. Another result is, in line with the theory, improvement in the economic efficiency as water does move from irrigators producing low value commodities to higher value commodities. This situation also implies that water moves from irrigators with less-efficient irrigation technology to those with more efficient, producing positive environmental and economic effects. Nevertheless, markets also polarise the irrigation community into two different classes of irrigators: a "water rich" class, which will continue high production during drought; and a "water poor" class, which will be exposed to reduced production during periods of drought, implying a deteriorating distribution of income.

As regards urban waters, their usage grew at a slower pace compared to that of irrigation waters; in addition to that, per capita usage shrank, resulting in the postponement of capital expenditure on new source development[94]. This development is a positive one in economic and environmental terms both in the short run and in the long run. The benchmarking system was applied on a wide variety of criteria in each state through the monitoring mechanism of Water Services Association of Australia in order to provide a basis of comparison with practices in other parts of the world. The result of a study conducted by Brotherhood of St. Laurence[95] found that losers from water markets were tenants and larger low income families. Another finding is the consumers' perception of price deregulation as a risk, hence great support for public provision of water.

Saleth et al. (1999)[96] underline the stress arising from the physical limits to water resource pressurizes water institutions in Australia. Furthermore, demand pressure on water resources has increased after legal provisions for environment (i.e., to maintain water quality and in-stream water needs). Under these circumstances, the major challenges that the Australian water sector faces among others are

[94] Ibid.

[95] Ibid.

[96] Saleth, R. M., Dinar, A.; Water Challenge and Institutional Response: A Cross-Country Perspective, 1999

maintaining water quality, controlling further stress on the already expropriated rivers and depleted aquifers, reshaping simultaneously the relationship between government and community, and the government and private sector, improving the physical health of water storage and distribution infrastructures, and enhancing the financial and investment self-dependency of the water sector. These issues were being addressed while the CoAG reform was being shaped, and given that compliance with these principles entails considerable amounts of federal money, most states were keen on initiating additional water sector reforms.

At the conceptual level, Tan[97], regarding the property framework, attacks the COAG policy because it "does not expressly recognize public property"; instead, the public property is implicitly acknowledged in COAG policy in the calls for allocation of water to the environment, and for environmental studies to be done before implementation of any new significant irrigation or dam projects.

Another objection raised by Tan[98] is permitting courts to intervene in the allocation of natural resources on the grounds that

> "the courts may not be the best legal institution suited to be, and are reluctant, policy makers. They cannot provide the details of a program of public rights which should be part of a state's water allocation and planning policy. It would be preferable to have a clear legislative expression of public property and provision for its protection in a framework of property rights".

6.1.2 The Murray-Darling Basin: Have the Water Markets Put an End to the Degrading Environment?

At the more practical level, the criticisms regard the costs of the development of the Murray-Darling Basin's water resources. There are severe environmental problems such as increasing toxic algal blooms, salinization of irrigated and

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[97] Tan, P. L., Diving into the Deep: Water Markets and the Law, available at: www.ipa.org.au

[98] Ibid.

dryland areas, and water logging. The flows of the rivers of the Basin have become lower and more season-dependent because of increased water demand, thus contributing to degradation of riverine environments. The results of a study of water use within the Basin, An Audit of Water Use in the Murray-Darling Basin in 1995[99] demonstrate that there have been substantial changes to the flow regime of the rivers of the Basin; these changes are continuing; and unless there are major changes to current management policies, these changes will continue into the future. Of the water that would have originally reached the sea from the Murray-Darling Basin, over two-thirds is now diverted from its rivers each year. The rivers are now in a state of drought (as defined by river levels) for more than 61 years in every 100 compared with 5 years per hundred under natural conditions. The increase in diversions has been primarily due to the expansion of the cotton industry and the use by growers of large on-farm water storage. As a result, there has been much conflict along the Darling and especially along some of its tributaries, between graziers, conservationists and irrigators. The non-irrigators hold the irrigators responsible for the reduced flows; the irrigators say that seasonal conditions over recent years are to blame. River flows and flow regimes are critical to river ecosystems. These changes have had dramatic impacts on the environmental health of the Basin's aquatic ecosystems and the rivers in particular. It has been suggested that the Basin has been "drained to death".[100]

A suggestion to surmount this problem within the market limits comes from Claydon[101] who advocates explicit rights for the provision of water for the environment and that such rights be tradable within a water market. Thus the environment would become an equal partner in water allocation and management, management would be improved, and environmental managers would participate

[99] Website of the Murray Darling Basin Commission, accessible at: http://www.mdbc.gov.au

[100] ibid.

[101] Seen in Pilgram, J.J.; Economic Instruments in the Management of Australia's Water Resources: A Critical View, Water Resources Development, Vol. 15, No. 4, 1999

in water trading. Such a system would also give clear title to and protection of water provided for environmental purposes.

6.2 Water Markets in Practice: the Chilean Case in General and the Limari Basin in Particular

6.2.1 The Overall Change in the Country

Saleth[102] estimates that there are 300,000 holders of water rights and 4,000 Water User Associations in Chile. Most are consumptive users accounting for approximately 68 per cent of the water rights, with agriculture accounting for 89 per cent of consumptive use. To be traded, traditional water rights need to be registered. However, only about 35 to 50 per cent of traditional rights have been registered[103]. The unregistered rights are held primarily by farmers and villagers. Those rights are generally being respected, although their legal status and security is uncertain. There is no cost for registering a water right, but one must be part of a Water User Association and pay the fees of the association, which may deter some small farmers from registering their traditional rights.

Criticisms are raised also at the legal level. According to Miguel Solanes (1998)[104], the water law fails to require the effective and beneficial use of waters, and thus leads to formation of monopolies of water rights and hydroelectric generation. In addition to that, the concept of historical consumptive use is not elaborated, since consumptive water rights allow the diversion, and eventual transfer of the full nominal entitlement of a water right and not only of the amount historically consumed. Another objection to the law is the limitation of the role of water administration and planning in assessing public interest elements

[102] Seen in Alvarez-Riviera, T.; Chipman, R.; Bryld, R.;Promoting Sustainable Production and Consumption: Five Policy Studies, DESA Discussiom Paper No.7; April 1999

[103] Ibid.

[104] Solanes, M.; Institutional and Legal Issues Relevant to the Implementation of Water Markets; The Water Page, 1998

concerning water transfers, with the underlying assumption that market deals with externalities and issues of public interest better than government organizations.

Solanes further claims that assessments of (dis)functioning of water markets reflect absence of public interest and externalities in the logic of the water rights system. The market mechanism is unable to solve conflicts within the existing legal framework; and conflicts either drag along or they are resolved by third parties on account of legal, political or economic considerations. The increase in the number of actors adds to the difficulty.

Another concern is about the equity aspects of the system given the lack of adequate information or enough resources for small and medium size farmers to take full advantage of the system. This situation emphasizes the necessity of raising consciousness and providing legal assistance to small farmers. Bauer (1995) argues that –notwithstanding the agrarian reform-

> "the shake up and consolidation of water rights during the initial years of the Code seems to have favored larger and more legally adept water users at the expense of the peasants, this being a reflection of their poor economic and social conditions, rather than changes in water legislation *per se*. The peasants tend to avoid the courts and State administrative agencies, are relatively un-influential in the Water User Associations. Legal and administrative support programmes must be put into practice to ensure that they benefited to the full. However, it is unlikely that these farmers operating on the economic margins were made worse off by the reform, in so far as the limitations noted by Bauer applied equally to their situation pre reform. Efforts have subsequently been made to improve the allocation to the poorest farmers"[105].

Still, the equity aspect is not totally gloomy; success has been registered in increasing access of the poor to potable water, as 99 % of urban residents and 94 % of rural residents are supplied typically for 24 hours a day. Factors such as ensuring that regulated water tariffs reflect the true cost of water, competition among water companies, subsidising water consumption for those with low incomes conrtributed to this ameliorated situation.

[105] Borregaard, N.; Convery, F.; Katz R.,Applying Trading in Developing Countries – the Chilean Experience, Fondazione Eni Enrico Mattei, presented at workshop: 'Trading Scales: Linking Industry, Local, Regional and National Emission Trading Schemes, organised for the Concerted Action on Tradeable Emission Permits by FEEM, Venice, 2001

About the environment, Dinar and Saleth[106] insist on the necessity of ensuring minimum in-stream flow in ecologically sensitive rivers/streams (especially by assigning the right on return flows to environment); and reducing water pollution from industrial waste disposal and urban sewerage and protecting, thereby, an acceptable level of water quality. According to the First Annual Report on the Environment of the World Bank[107] maldistribution causes more environmental deterioration than misallocation.

The most important problems independent of the water allocation mechanism are those arising as a result of unavoidable transaction costs, externalities due to inadequate definition of use rights in the Water Code, and uncertainty regarding the availability of water. Likewise, certain problems related to the allocation system have been identified; problems such as the lack of adequate and timely information; conflicts arising between users due to the sale of traditional rights; avoidable transaction costs; and the hoarding of nonconsumptive rights[108].

6.2.2 Change in the Limari Basin: Have the Water Markets Improved the Situation?

Water markets, from a neoliberal point of view, reconcile practical and economic management of water. The users' associations, via pricing, charge users for the "use costs"[109] (which are the investment and operating costs incurred in storing and delivering the water to the user) which are lower than opportunity cost. In the

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[106]Dinar, A.; Saleth, R. M., Water Challenge and Institutional Response: A Cross-Country Perspective, 1999, www.worldbank.org

[107] Seen in Solanes, M.; Institutional and Legal Issues Relevant to the Implementation of Water Markets; The Water Page, 1998

[108] Bauer, C. J.; Bringing Water Markets Down to Earth: The Political Economy of Water Rights in Chile, 1976-95; World Development, Vol. 25, No. 5, 1997

[109] Briscoe, J.; Water as an Economic Good: The Idea and What It Means in Practice, World Bank Washington Dc, 1996

Limari Basin the "use cost" is about 0.5 cents per cubic meter, and the opportunity cost about 5 US cents per cubic meter. Water markets ensure that user behavior is not driven by the financial cost of the water but rather by the opportunity cost, in the sense that, if the user values the water less than it is valued by the market, then the user will be induced to sell the water. In this case, the user will in fact face the appropriate economic incentives, but de-links these incentives from the tariff[110].

Briscoe et al. (1997)[111], evaluate the functioning of markets (and the users' associations at various levels) in this area as satisfactory. They praise the positive aspects of the water markets in Limari emphasizing the fact of existence of buyers and sellers ranging from short-term sales of specific volumes of water, to annual leases, to permanent sales of rights etc. In addition to that, water is traded from lower-value uses to higher-value uses; prices are responsive to both temporary scarcity and longer-term scarcity; which means that trading is active.

With a regulated irrigation system (having three dams, including a large reservoir for interseasonal storage area) agriculture is well developed. Seasonal rentals of water rights have occurred in this area, especially in drought years[112]. Trade within the irrigation sector and trade between farmers are common (the urban sector has adequate water), although little intersectoral trading occurs. A survey of 37 farmers selling water and 19 farmers buying it reported transfers of rights to 9.2 million cubic meters. The gains from trade (measured as the difference between the value of water to the seller before the sale and the value to the buyer after the sale) were, on average, $2.47 a cubic meter ($3,045 an acre-foot), with a transaction cost of $0.069 a cubic meter ($86 an acre-foot)[113]. One share equals,

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[110] Ibid.

[111] Briscoe, J., Salas, P. A., Humberto P. T.; Managing Water As an Economic Resource: Reflections on the Chilean Experience, 1997, available at www.worldbank.org

[112] Hartle, V.; Gauer, K.; Urquiza, A.; The Use of Economic Instruments in the Environmental Policy of Chile, 1994, Deutsche Gesselschaft für Technische Zusammenarbeit, Division 402

[113] Easter, K.W.; Rosegrant M.W.; Dinar, A.; Formal and Informal Markets for Water: Institutions, Performance and Constraints, *The World Bank Research Observer, vol. 14, no. 1 (February 1999)*

on the average, 4880 m3/year, so that the average gains from trade in the Limarí Valley are US$11,700 per share[114].

Unfortunately, not all the picture is bright in the Limari Basin. Unfavorable changes in farming patterns and social geography of the area have occurred with the water markets. While the legal system has been subject to criticisms, the markets are also accused for deteriorating equity and environmental conditions.

Briscoe et al. (1997)[115], after stating the positive aspects of the water markets in Limari, emphasize the malfunctioning issues. They point at problems experienced with matching the location of sellers (generally in the lower reaches of the Limari Basin) and buyers (increasingly wanting the water in the upper reaches). Another problem is the only partial integration of urban water supplies into the water rights system. The major challenges faced by the government are formalization of a large number of traditional water rights which are not yet formal; addressing critical environmental concerns (such as minimal ecological flows, and water reserved for wetlands) in water projects; including into the system the economic management of groundwater and the integrated management of surface and groundwater resources; dealing with speculative purchases of water rights (generally by power companies) to prevent their social and economic impact which generally encourages non-use and crowds out farmers and other smaller users; and to improve the performance of the administrative and judicial system with respect to water rights and water disputes which is too slow, too costly and too unpredictable.

At the more practical and observable level, small farmers have been obliged to leave their farms and seek employment at large vineyards with the increase of

[114]Kaarkkainen, T., Pricing Irrigation Water (with a Focus On Developing Countries), 2001, Helsinki University of Technology, Laboratory of Water Resources, Research Report, www.water.hut.fi

[115] Briscoe, J., Salas, P. A., Humberto P. T.; Managing Water As an Economic Resource: Reflections on the Chilean Experience, 1997, available at www.worldbank.org

land devoted to grape production. Residents had to rely on food from outside sources since land fulfilling local needs is taken out of production. Under these circumstances, one could say that the growth of the table grape industry in the Limari Valley has had a substantial impact on the agricultural land-use and settlement patterns of the valley[116].

Also, the social geography of the Limari Valley has been subject to alterations with the change of land-use practices. Large numbers of migrant workers from the countryside are drawn to cities during the harvest season when the demand for labor increases. With this influx of people, which more than quadruples the population, come urban problems such as crime, drug use, and alcoholism. The change for women comes with the employment opportunities in the new vineyards of the valley. Yet, as more women enter the workforce, families spend less time together, challenging traditional expectations[117].

[116] Webpage of Annenberg Media, Dynamic Pacific Rim, Discussion of Case Study Themes : Ecuador and Chile, available at: http://www.learner.org/powerofplace/themes22.html#case2

[117] Ibid.

CHAPTER 7

CONCLUSIONS

In the international arena, water constitutes an area where the developments have been shaped and furthered not only via intergovernmental agencies like the United Nations and their bureaucratic cadres, but also through other types of institutions like the Global Water Partnership and World Water Council comprising, among others, mainly private transnational giants like Suez, Véolia etc. In line with the wave of neoliberalism that became the conventional wisdom in policy making circles in developing as well as developed countries; and that, among others, fed the ambition of the private sector to multiply its profits; perception of water evolved from being a social good or human right to an economic good which should be priced to the cover full cost, materialized in the fourth principle of the Dublin Conference in 1992. The four principles adopted in that conference construct the bases of the IWRM concept that suggests inclusion of the private sector -the principal objective of which is to maximize profits- as a stakeholder in the process of water management.

This logic compares the pricing of food as an essential element of human life to that of water which is similarly essential. Together with the widespread opinion according to which the private sector functions with a higher degree of efficiency compared to state institutions, the transnational firms increased their weight in the process of commodification of water. However, the strange omission of the fact that the private sector prioritizes profit concerns over others including social ones has resulted in the display of controversial aspects in the developing countries. People, unable to pay for their increased bills have been obliged to abandon their connection to municipal infrastructures. Besides, private firms are unwilling to invest in such parts of cities which are unlikely to serve their purpose of profiting.

Still, the concept of IWRM cannot be reduced to commodification of water since it encompasses aspects of vitality of water for life, development and environment; participation; and women. In the cases studied in this thesis, the Limari Basin is evaluated within the framework of water markets while the Murray-Darling Basin is viewed from a broader IWRM perspective.

Before evaluating the water markets, the major difference between the two countries, that one belongs to the group of developed countries and the other takes place within the developing world, has to be taken into account. Some indicators of the category of developing countries are their incomplete degree of institutionalization, lower gdp per capita levels and an inequitable distribution of income, their economic structure in which agriculture provides a considerable level of employment, lower level of education and lower degree of participation to decision-making processes etc.

Comparison of the Chilean example to the Australian one, besides the differences in the functioning and results of water markets in this case, reveals the different categories of countries they belong. Problems experienced in Chile are much more "vital" or "urgent" to practical human life; the changes occur in forms of migration, deteriorating social equity, inability of peasants to take place in the decision-making system as well as to oppose and to prevent practices of water companies the activities of which will be negative on their levels of income. They are (kept) unaware of their legal rights. The legal system is accused of working slowly and thus leaving many issues unresolved for a long time. As to the environmental issues, they are treated less frequently in the literature.

Conversely, the ciriticisms towards the Australian markets are largely concentrated on the inability of water markets to stop environmental degradation. The quality of water is constantly degrading, increasing the possibility of droughts. As concerns the social equity aspect, the public perception that adopts a negative attitude towards price deregulation due to the risk it presents is emphasized. Also, the fact that large, low income families have been adversely

affected by water markets is insisted upon. At a conceptual level, the interference of law to this field is objected by Tan who mentions that courts are not and should not be policy makers. In cases of disputes, local administrations take initiative and thus provide a quicker and less expensive, time-consuming solutions to problems.

One aspect which is supposed to be well functioning in both examples of Murray-Darling and Limari is the economic efficiency boosted by the water markets. In both cases, a reallocation has been taking place from lower-income uses to higher income uses of water. Trading of water rights is contributing to efficiency and output gains. However, it must be mentioned that Limari Basin is generally considered to be the most successful in Chile, which means that the practice taking place in Limari can be attributed to neither the whole country nor the whole developing world.

Improving the functioning of both markets is not impossible given that the problems are identified. While Chile is expected to tackle the social dimension of the subject; Australia has to deal with the environment, an area about which humans can be powerless many times.

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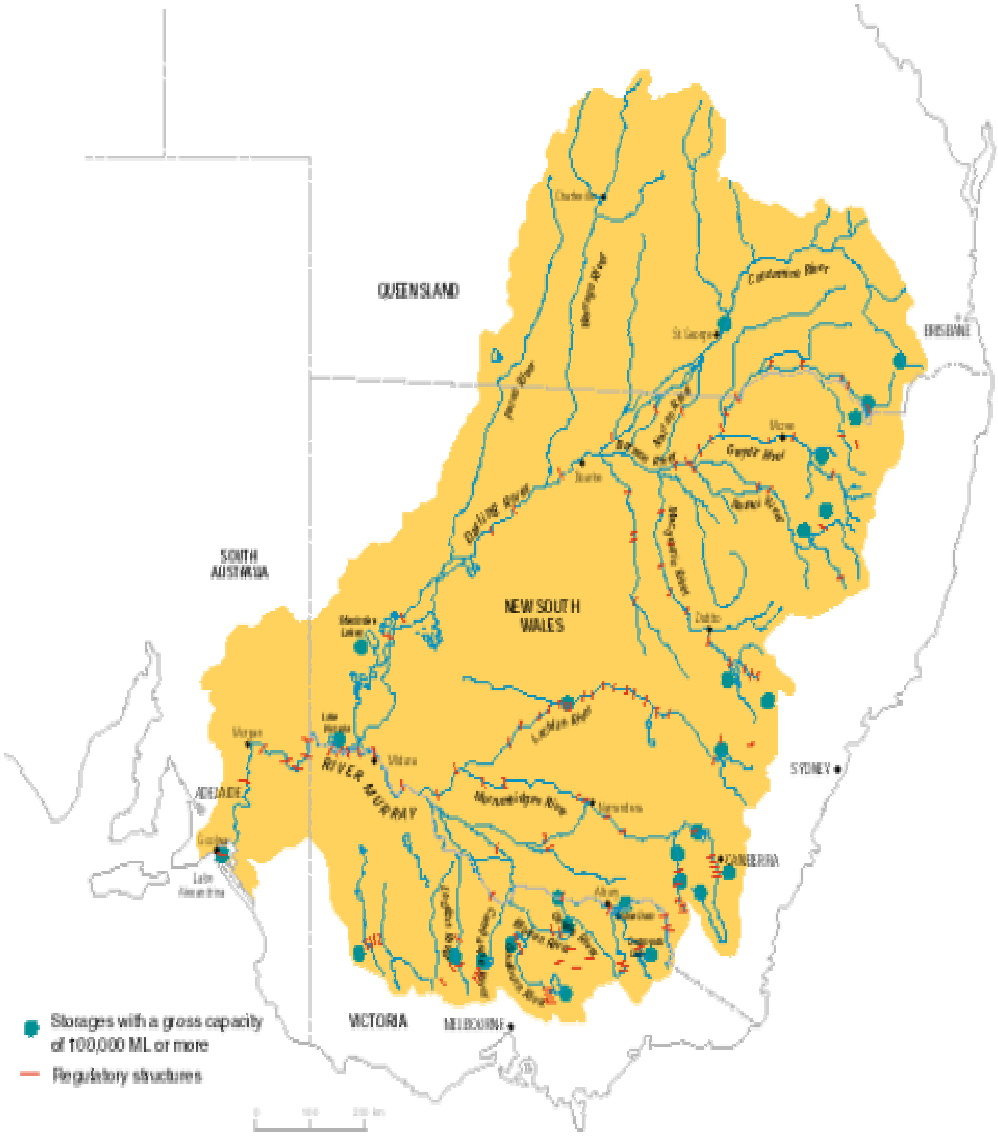
www.worldbank.org

www.worldwatercouncil.org

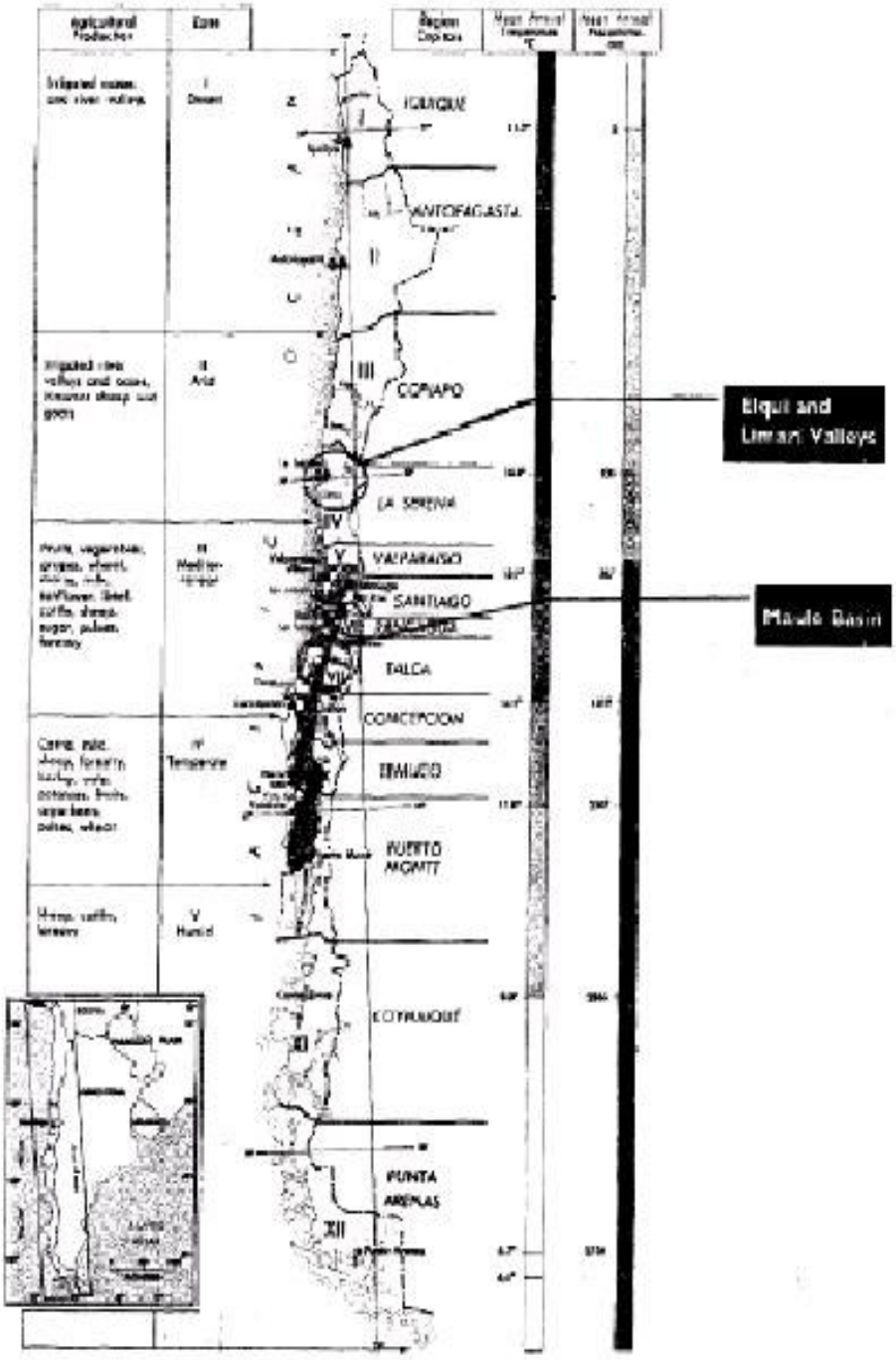
APPENDICES

APPENDIX A: THE MAP OF MURRAY-DARLING BASIN



Source: www.mdbc.org

APPENDIX B: THE MAP OF THE LIMARI BASIN



Source. Galaz, V. R.; Water and Equity