

Water Governance Key Approaches: An Analytical Framework

Literature Review

By Liliana Miranda, Michaela Hordijk, Rommy K. Torres Molina





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1 Introduction

Different actors have different approaches to water, governance, and water governance. In this document we present working definitions of water, as well as some insights regarding water conflicts and how different actors value water. We also present the four main approaches to water governance in an attempt to contribute to a greater understanding of the perspectives, interests and main concerns of the various actors in the water sector. An increased understanding of underlying values and approaches can foster consensus building for the reconfiguration of water governance to equip it to tackle the expected effects of climate change.

The Millennium Development Goals (MDGs) aim to halve the number of people without adequate access to water and sanitation services by 2015. Although the MDGs do not have a strong focus on water governance, nor on city/local institutions and processes, this goal is one of the main concerns of the water governance debate. According to the UNESCO (2006), the current water crisis has been mainly caused not by a lack of water supply or technology, but rather by a failure in water governance. In the context of climate change, and the increasing burden on water resources - including water pollution - as a result of economic development and societal change, it is becoming increasingly necessary to address the issue of the nexus between poverty reduction and water ecosystem management (Batchelor 2007).

Because of their densities cities concentrate environmental risks as well as the best opportunities to reduce these risks. This also holds for the exposure to the risks stemming from the water-related consequences of climate change, which determine the water related vulnerabilities of the cities' population. As Brooks points out one can only talk meaningfully about the vulnerability of a specified system to a specific hazard or range of hazards (Brooks 2003:3). This paper thus deals specifically with the water related vulnerabilities of cities, taking into account the expected effects of climate change, and how urban governance can respond to these challenges. The urban water sector will deliver many of the impacts of climate change through the increased floods, heavy rainfall events, or the contrary: droughts that are predicted (Danilenko, Dickson et al. 2010). The paper thus highlights city governance interaction with the water sector, in order to understand the complex and even conflictive nature of city water policies and city water governance strategies in the context of climate change threats. Cities do not only need water for their populations' drinking water and sanitation. They also need water for their food, industrial production and energy consumption. No large scale energy provision can run without water. Increasing wealth goes hand in hand with increasing water use, and increases competition between users and uses. Thus, in fast growing cities in fast growing economies water can become highly contested. The overall economic performance of a city says nothing about intra-city

differentials, neither in terms of income nor in terms of access to basic environmental and other services¹. It can thus be expected that also in cities in the “higher middle income countries²” as Brazil, South Africa and Peru we will find increased demand for water from higher income groups and commercial and industrial activities, whereas the most basic water needs of the poor have not yet been met, despite official statistics proclaiming the contrary³.

The possible tensions between diverging interests of different groups are discussed from an environmental justice perspective, broken down into the classic division of the “green” and the “brown” agenda. The brown agenda addresses the direct health risks the urban poor face as a consequence of the low quality of their direct living environment, and is thus dubbed a “development” agenda. The green agenda was until recently understood as encompassing all ecological threats, such as the loss of biodiversity, depletion of the ozone-layer and the emission of green house gasses. Nowadays the green agenda is more and more framed as the “climate change” agenda. There is growing evidence that the consequences of climate change will put first and foremost the urban poor at risk, therewith the consequences of the failure to address the green and brown agenda simultaneously will be borne by the urban poor (McGranahan, Balk et al. 2007; Satterthwaite and Moser 2008). To what extent the tensions inherent in the poverty reduction (brown) and ecological preservation (green) nexus in Southern cities can be reconciled is mainly determined by the quality of urban water governance. According to Castro (2007): “In practice, water governance

consists in the interaction between governments, large businesses, political parties, civil and other organizations representing sector interests (e.g. workers’ unions, religious organizations, peasant movements, etc.), international agencies (e.g. international financial institutions and other agents of the process of “global governance”), NGOs, and other relevant power holders. These actors are involved in continuing debates and in socio and political confrontations around how water and essential water services should be governed, by whom, and for whom. These confrontations are at the heart of the process of democratic water governance, which is characterized not only by dialogue and negotiation but also, unfortunately, by growing uncertainty and protracted social and political conflicts” (Castro, 2007 p.107).). It is important to note that within and around the city there are different users with competing uses and interests, such as the business sector (mining and secondary industry), agriculture (large and small scale), commercial activities and households.

Yet, as Castro (2007) also notes, “whereas a high level of sophistication has been reached in the techno-scientific fields related to water ... we are still very far from understanding the historical, socio-economic, cultural and political processes underpinning the “water-crisis”. ... Developing water governance and water management practices grounded on the principles of sustainability and social justice is thus one of the most urgent challenges facing water governance in the 21st century”(Castro 2007:99). The expected effects of climate change further increase this urgency.

This leads us to the following overarching question in this research programme:

To what extent are the metropolitan city’s key actors - individuals, institutions, and social networks - capable of reaching socially supported agreements (or “concertar”⁴) generating changes in the water governance approach in their city, and to what extent do they take the expected consequences of climate change into account?

Building on Castro’s observation that we need to better understand the relevant socio-economic, cultural and political processes, we will focus on unravelling water governance in its different dimensions. This paper aims to identify the knowledge gaps on water governance processes in Southern cities in fast growing economies. It is organised

1 In the early 1990s the Stockholm Environmental Institute pioneered a household level intra-city comparison of differences between environmental conditions in Sao Paulo, Jakarta and Accra, which showed significant differences between richer and poorer areas in all three cities. This has informed many similar studies and statements in UN reports. The initial reports were published in the Urban Environment Series of the Stockholm Environment Institute [sei-international.org](http://se-international.org). Case summaries have been published in various issues of Environment and Urbanization (<http://eau.sagepub.com/content/5/2/10.short>)

2 In the World Bank classification Brazil, Peru and South Africa are classified as upper middle income countries (\$3,946 to \$12,195), India is classified as lower middle income (\$996 to \$3,945).

3 A public standpipe at more than 100 meters distance of a house providing low quality water can be considered an improved source. Consequently international statistics on access to drinking water present a gross over-estimation. These same statistics are used to measure progress towards achieving the MDGs. According to these WHO-UNICEF statistics 99% of the urban population in Brazil and South Africa has access to improved water sources, and in India this is 96% (Biswas 2010:160)

4 “Concertación” is word which has no proper translation into English. We have discussed the concept elsewhere (Miranda and Hordijk 1998). It refers to the process of reaching agreements for joint action through dialogue and deliberation.

in five parts. We first discuss water scarcity and conflicts. In the second part we discuss the underlying values actors attach to water, and in the third part we present a tentative classification of four different approaches to water governance in which these values play a role. The fourth section discusses the territorial dimension of water governance, the tensions inherent in the poverty-ecology

nexus in relation to water, and how climate change will put this under further pressure. This leads to the final section in which we will present the sub-questions derived from this literature review, that will form the core of Workpackage 4.

“When the well is dry, we know the worth of water.”
Ben Franklin, Poor Richard’s Almanac, 1746

2

Water Scarcity, Conflicts and Governance

In addition to the existing “water crisis” already mentioned, there is a solid body of literature coming from academia, the business sector, and international agencies which predicts serious water shortages in the future, and envisages that the conflicts that these shortages will generate could even lead to wars. “By 2030, under an average economic growth scenario and if no efficiency gains are assumed, global water requirements would grow from 4,500 billion m³ today (or 4.5 thousand cubic kilometres) to 6,900 billion m³. ... this is a full 40 percent above current accessible, reliable supply (including return flows, and taking into account that a portion of supply should be reserved for environmental requirements). This global figure is really the aggregation of a very large number of local gaps, some of which show an even worse situation: one-third of the population, concentrated in developing countries, will live in basins where this deficit is larger than 50 percent” (ADAMS ET.AL 2009:5).

These predictions are compounded and incorporate a strong element of uncertainty when you add the component of climate variability and its impact on the loss of water reserves. This includes the reduction (or intensification) of rainfall, longer dry spells and more intense rainfall events as well as unpredictable water-related risks. In this regard the water crisis is already underway and existing conflicts - usually related not only to inefficient and low-quality services and infrastructure within cities, but also to the hoarding of water by those who are economically stronger⁵ - are beginning to proliferate and become exacerbated. Additionally, we already note an over-exploitation of water bodies (without any opportunity for its natural recovery) as well as the pollution of the majority of the natural fresh water flows. Current and future water scarcity (particularly in desert or arid areas) and the risks of disasters associated

with climate variability intensify the existing water crisis. The challenges are aggravated by the uncertainty, tension and conflict which form part of the water scenarios in the cities of the future. It should be noted that there are also authors such as Biswas (2010) who maintain that these estimates are unreliable and that such shortages will not come to pass. They claim that we should focus on the ability to create infrastructure and technology to properly store water in the rainy season, and then properly manage the provision of water services during the dry season. In both cases, the issues of governance and water management, particularly about who decides on the use and exploitation of the resource, are central.

In fact, empirical evidence⁶ shows that throughout the world, conflicts are already occurring as a result of the dissatisfaction of large groups of society, usually the most vulnerable, with respect to the decision-making process which favours the few at the expense of the vulnerable, excluding the latter from access to drinking water which is safe and healthy.⁷ Some of these conflicts are fully manifested, others are latent, are pending, or have temporarily entered into a stage of remission. Yet they will emerge sooner or later as a result of forces of nature and weather, or when those most affected neither can nor wish to bear more of the burden. As such, conflicts over water are socio-environmental conflicts, with the more overt conflicts being of a socio-environmental nature, and the more latent being generally more environmental than social. As long as there is only the prospect of the well drying up, the overexploitation of the well is considered mainly in terms of a latent environmental conflict. Once the well actually reaches its end, competition over the scarce resources

5 Water has been subjected to a progressive process of over-use, exploitation and excessive pollution on the part of transnational corporations. (Ximena, M. et al, 2011)

6 World Water Wars, <http://www.worldwaterwars.com>

7 Water is an essential life-source for all living being. Yet the ADAMS ET.AL projects that by 2030 in some developing regions of the world water demand will exceed supply by 50% (WGR 2009:40).

transforms into an open socio-environmental conflict. In contexts where there is a long history where the (over) exploitation of natural resources goes hand in hand with the exploitation of human beings – as is the case in many resource rich developing countries – there is an inseparable association between social and environmental problems (Gudynas, 1992:106).

For example, as many authors argue, Latin American environmentalism, unlike that of Europe, is highly associated with social issues related to (sub) development. (Gudynas, 1992, cited in Merlinsky 2009: 36) Giarraca (2006) argues that environmental protests in Latin America have the common characteristic of being based on disputes in which natural assets as generators of wealth are at stake. Also, underdevelopment combined with environmental problems and poverty expresses a long history where the exploitation of human beings is associated with the depletion of natural resources. There is therefore an inseparable association between social and environmental problems. This helps explain why conflicts involving water bring to light deeper disputes, particularly in the countries of the South⁸. Conflicts over water have been widely documented, both historically and presently (Merlinsky 2009). Empirical evidence shows that historically those that have control of water are wealthy, and those who have no access to water are poor or dislocated. In reality the famous phrase, “water flows in the direction of power” has been the prevailing situation (Boelens, Dávila et al. 1998:447) In cities in the South water not only polarizes public opinion, but fragments urban spaces into areas with and without water. In the process of urban development the gap between the haves and the have-nots is increasingly evident, and the urban space is fragmented by a tendency towards discrimination and socio-environmental conflict (Fernández-Maldonado 2007). In conflicts over water the dispute is not exclusively or mainly socio-environmental, but

8 This same line of reasoning can be found in the definition of social-environmental problems as “manifestations of the need for transformation of structures of domination and ‘adjustment’ of the social and economic relations which are generated by disputes over access to and control of natural resources „(Sabatini and Sepulveda, 1997: 52).

is also economic, political, cultural, and territorial, therefore also issues of water governance have to encompass all these different dimensions (Merlinsky 2009: 7-9).

Finally, corruption, lack of integrity, and unethical and dishonest conduct - whether originating from the private, public or community sector - associated with weaknesses and failures in water governance are a critical generator of conflict, tension and mistrust, resulting in the loss of large amounts of finance destined for the sector. It manifests itself both as bureaucratic or petty corruption (in which a vast number of officials abusing public office extract small bribes and favours) and as grand corruption (involving the misuse of vast amounts of public sector funds by a relatively small number of officials) and as state capture (in the collusion between public and private actors where the private sector captures the state for private benefit (Shah and Schacter 2004 p.2). A clear example of this is the illegal water collection and sale by the private sector, which takes place at very small local level of individual households to the level of large companies. Until recently a certain level of corruption in the way water was governed was even accepted by governments and the international community. This discouraged investments in the sector, reduced its effectiveness, and undermined stakeholder involvement (Batchelor 2007:6). Other un-ethical behaviour with serious consequences for the sector is the contamination of water through the discharge of improperly treated wastewater⁹ or pollutants into natural waterways.

9 Wastewater from human activities comes in the form of black water (containing human excrement - sewage), grey water (wastewater from domestic activities - not sewage), yellow water (urine), or industrial and mining water (toxic). Conventional sanitation systems rarely separate these types of waste, referred to collectively as wastewater or sewerage, and, whether treated or not, flows of these wastes are generally flushed through pipes (open or closed) into water-courses and / or natural waterways. Sanitation technologies for wastewater are conventionally based on either the “flush and discharge” (wc) or the “drop and store” (latrines) model, usually using water as a means of transport and not treating the polluted freshwater, and this is one of the most serious problems in most of the earth’s river basins.

3

Conflicting Values in Water Governance

Water governance is thus not only about dialogue and consensus, it is also about dealing with uncertainty, conflict and corruption. Conflicts and (disputed) rights are intrinsically linked. Why, how, by whom are decisions on

water resources made? On what geographical scales and for whose benefit? What property regime authorizes such decisions? Depending on the social and political organization of property rights (for instance: who authorizes the law,



what are the powers and of what authority, and what claims and powers are associated with the user’s rights) we distinguish between public property regimes, private property regimes, common property regimes and open access situations (Musetta, 2010). These issues of rights to and over resources are intertwined with differing opinions on the steering principles for water management. Are water provision and governance mainly a state responsibility, should water be provided by the market based on market principles, or should it be managed by the community using it, held in common property? It can be assumed that situations of open access could include access to water on the part of other living beings and ecosystems on the planet, for which there is a solid body of literature associated with conservation groups and environmentalists but little included in the dominant approaches to water governance. As is the case with governance in general, also in water governance approaches there has been a general shift from an emphasis on state provision (thus public service delivery), to private provision based on market principles, and more recently a multi-stakeholder approach in water governance. And as in the “governance” debate in general, the more technical/institutional and hierarchal models, and the

market model obscure the fact that water governance is an inherently political and conflictive process, in which existing power structures play an important role. Even the multi-actor approach – that recognizes that different actors have different interests – often presents an idealized version of symmetric, triangular interaction between the state, civil society and the market, in stead of highlighting how power differences play a role in who gets access to which water and for what price. Furthermore we would like to stress that different approaches can exist in parallel. It is for instance not uncommon that where public provision fails to reach the poor, both large and small scale private vendors step in, selling drinking water to the poor at prices that can be more than 10 times higher than what publicly provided richer households pay. Partnerships between public and private actors can also lead to more mixed approaches. At least five different water service delivery models can be identified, including those originating from the state, from the private sector, from the community, from public-private partnerships (market or community led), or from multi-stakeholder platforms. These are not necessarily mutually exclusive and can occur in different areas or in response to different social groups within the same city or territory. See Textbox 1:

Textbox 1: Water Management Service Delivery: Basic Models

<p>a. Public provision When the central, sub-national, or local government is directly providing the water service with no other intervention. This can be done via Water Boards or state-owned water companies.</p>
<p>b. Private provision When a private company is providing the water service and it is charging water “clients” directly for their services.</p>
<p>c. Community based provision (including water trucks) When local communities and non-state and/or informal providers are (left generally alone in) providing their water service. In most cases no big infrastructure is involved, and walking, wells and water trucks form part of the service model due to the fact that (mainly) they are not connected to any infrastructure. “[...] local communities in the developing world have done much more to improve the livability of cities than any other actor, including the government.” (UNCHS 1996).</p>
<p>d. Public-private partnerships – two different approaches – market-led and community-led When there is an association and/or collaboration of public and private entities, providing water services using either a market-led or community-led approach with the engagement of formal or informal community associations.</p>
<p>e. Multistakeholder provision and/or Multistakeholder arrangements Multi-stakeholder platforms for water management are institutional innovations for combining the diverse agendas of a number of actors who recognize a common management problem and realize their interdependence in solving it (Steins and Edwards, 1998). An example of these could be multi-sectoral and multi-actor oriented committees or commissions. Baud et al (2007) says that multistakeholder arrangements on the other hand mean that (a) several organizations are involved, and (b) cooperation is not limited to the private for-profit sector, but includes local communities.</p>

Elaborated by: Liliana Miranda Sara



It are not only differing values and principles with respect to governance that play a role, but also institutional cultures, interests (legitimate or not) and disciplinary backgrounds of the different actors that influence – consciously or unconsciously - how they value water. Water experts with a natural science background tend to see water first and foremost as a natural resource (finite or not), approach it in a techno-scientific (depoliticized) manner, and look mainly for quantitative indicators for the physical and technical conditions of this resource. Those who administer water and are responsible for the maintenance of the infrastructure most often see water predominantly as a commodity, and approach it from a market-based rationality, with a focus on quantitative indicators measuring economic efficiency and other market criteria. On the other extreme we can put the critical social scientist – more and more working from a political ecology perspective – who aims to unveil power-configurations and structural inequalities. These critical scientists are more

attentive to the different social identities of the actors involved, as well as to the different languages of valuation¹⁰. Ecologists often use quantitative indicators measuring the level of sustainability to make their point. For the water-functionaries - although often also from a techno-scientific background – once a part of the political or administrative system, this latter rationality starts to prevail, and electoral or (party)political considerations are of more importance, and so are the bureaucratic norms.

The rationale and observations that each actor uses provoke a series of additional barriers and obstacles which influence the type and level of knowledge, languages, codes, tools and techniques applied in the implementation of water governance, making this task even more complex. Castro (2007) clearly shows this in Table 1 as follows:

10 The seminal work of Swyngedouw on Guayaquil (2004) is a prime example of this approach.

Table 1: Water conflict and epistemic subjects

"Water conflict"		
Epistemic subject	Rationality	Observables
Water expert (Geo-hydrologist; hydraulic engineer, etc.)	Techno-scientific	Quantitative indicators Physical-natural and technical conditions and drivers
Administrative-financial experts – technocrat/private sector	Market	Water resources Quantitative indicators Economic efficiency Market criteria (including cost recovery and ability and willingness to pay).
Water functionary	Policy-administrative	Bureaucratic norms Electoral and party-political considerations
Ecologist	Ecological	Indicators of sustainability-un-sustainability Ecosystems
Critical social scientist	Socio-political	Power configurations Structural inequalities Social identities Languages of valuation

Adapted from: Castro, José Esteban, Water governance in the twentieth-first century, *Ambiente y Sociedad*, Vol. 10 No. 02, Jul/ Dic 2007

4

Water as an Economic Good, a Social Good, a Socio Ecological Good or a Sector

Competing approaches on how water should be managed and governed are also heavily influenced by how one views water¹¹ in its own right. In the scientific literature as well as among the actors involved in water governance we find at least four different approaches to water (often grouped with drainage and sanitation). These approaches are:

1. Water (drainage, sanitation, recycling and reuse) seen as an economic good or a commodity, with an integrated water¹² resource management (IWRM) focus.
2. Water (and sanitation) seen as a human right and a social good. This can be complementary to other approaches.
3. Water (drainage and ecological sanitation¹³) seen

11 Or only seen as a resource depending on their point of view.

12 The term "water" generally refers to the natural element, while the term "water resource" refers to water as an economic good, able to be used for any purpose. As such water is not necessarily a water resource, to the extent that its use is not always economically viable. (Braga et al. 2006:1)

13 Ecological sanitation is a non-conventional approach to the way people think about and act upon human excreta. It is a "closed-loop-approach" as well as a zero-discharge approach, keeping fresh and marine water bodies free of pathogens and nutrients. Firstly ecological sanitation takes an ecosystem approach in which urine and faeces are considered valuable resources needed to restore soil fertility and increase food production. Thus, sanitation systems are designed to mimic ecosystems in that human "waste" is a resource for microorganisms that help produce plants and food. Secondly, ecological sanitation is an approach that destroys pathogens. This makes reuse of excreta safer and easier than treatment of waste water that often fails to capture the nutrients. Thirdly, ecological sanitation does not use water, or very little water, and as such is a viable alternative in water scarce areas. Fourthly, ecological sanitation can provide hygienic and convenient services at less cost than other approaches. It is a decentralized system, based on household and community management, and the need to invest in large-scale infrastructure and operate centralized institutions is drastically reduced. In summary, under this approach human waste and wastewater can be of major benefit to water and soil quality, improving food security and contributing to the greening the cities (Based on Esrey, Steven, Andersson, Ingvar, Hillers, Astrid, Sawyer, Ron Closing the Loop, Ecological Sanitation for Food Security (2000)).

as a socio-ecological good, also can be seen as a human right as well as the right of other living beings and ecosystems. A specific stream within this group emphasises that water (not only fresh water) is a finite and vulnerable natural resource (and/or non compensable) and combines this with a holistic or deep ecology approach¹⁴.

4. Water (and sometimes sanitation) seen as a sector. This often goes hand in hand with approaching water as an economic good and a renewable natural resource within an integrated water and/or river basin resource management approach.

Before we turn to a more detailed description of each of these approaches, it is important to realize that for water governance of the city it is also important how the territorial dimension of water governance is dealt with, and from which perspective the city is approached. Based on experience with both academics and practitioners we tentatively distinguish the following three groups:

- 1st Those mainly looking at water from outside the cities (thus parting from the global or regional perspective, approaching the river basin and the rural/peri-urban areas)
- 2nd Those mainly looking at water from within the cities (often parting from the neighbourhood level to look at the city as a whole and the rural areas surrounding it); and
- 3rd Those mainly looking at water from a multi scalar perspective (thus taking up-to-downstream into account, combining the global and regional scale with the city, its territory, and the neighbourhoods within the cities and vice-versa. This is often a holistic or ecosystemic approach, which also takes a multi-level perspective on governance issues.

It should be noted that both the classification of four different approaches to water as the specific approach to the territorial dimension in urban water governance are tentative, and will be further validated throughout this project.

14 This includes the realization that water ecosystems have definitive natural limits within which we have to stay.

Approach One: Water as an Economic Good

At the International Conference on Water and the Environment (ICWE) held in Dublin in 1992 water was explicitly defined as an economic good¹⁵.

Following from this, Integrated Water Resources Management has become the dominant global approach, supported by multinational business groups and international agencies, particularly lenders like the World Bank and the governments from the North. IWRM is promoted by highly influential consortia, such as the fora convened by the World Water Forum (<http://www.worldwaterforum6.org>) tri-annual mega-events whose organizers are grouped in the Global Water Partnership (www.gwp.org). It should be noted that both the Waterforum and the Global Water Partnership are criticized for being private-sector dominated (Biswas 2010). Under this approach water is considered mainly as an economic resource¹⁶ and the management approach falls within the perspective of the integrated management of water resources, taking into account the management of the basin as a whole (upstream and downstream) as well as recycling and reuse of wastewater as an additional source for use in various human activities and ecosystems themselves, all based on economic valuations. Critics of IWRM say little has been implemented in this regard thus far.

The concept of Integrated Water Resource Management adopted by the Global Water Partnership (2000) is: *“a process which promotes the co-ordinated management and development of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.”* Taken from Green, 2007

15 Freshwater is a finite and vulnerable resource it has an economic value in all its competing uses and must be recognised as an economic good.” (Principle 1 and 4 from the Dublin Principles, 1992) <http://www.wmo.int/pages/prog/hwrp/documents/espanol/icwedec.html>

16 When one carefully reads the statement, one can see the double discourse. “Water” might be placed under strict public control, in its provision it still can be seen as a private good or service. “Water is a public good and should therefore be under strict public control, independently of whether the services are delegated to the private sector or not”. Istanbul Water Consensus (2009), WWF5 http://www.worldwatercouncil.org/fileadmin/wwc/World_Water_Forum/WWF5/Istanbul_Water_Consensus_Eng_Final.pdf

The perspective emphasizes raw water resource availability at the basin level. The technology to use water more productively anywhere in the economy is also included in this perspective, given its role in reducing water demand within particular sectors and hence increasing availability for other uses. Likewise, water re-use technology is included in this perspective, as it also decreases the net withdrawals of water (ADAMS ET.AL 2003: 32).

The pressure to privatize water services during the 1990s lead to a series of conflicts and protests by communities, and this, coupled with the poor economic performance of large corporations involved in the sector, lead to a movement towards the re-nationalization of privatized water companies. This occurred in Buenos Aires and Tucuman in Argentina, Cochabamba and El Alto in Bolivia, Manila in the Philippines, Grenoble in France and Atlanta in the USA, among others (Bevillacqua 2010; Wiener, 2006).

Approach Two: Water as a Human Right – a Social Good

On July 28th the United Nations General Assembly declared that ‘Safe and clean drinking water and sanitation is a human right essential to the full enjoyment of life and all other human rights...’ (UN, 2010), calling on UN Member States and international organizations to offer funding, technology and other resources.

Bolivia presented the initiative to recognize water as a human right that ultimately won the majority vote in the UN: “We cannot live without water;, therefore water cannot be a private business... (because) it violates human rights. Water must be a public service. It is not possible to privatize basic services, particularly water and sanitation.” (Extract from the inaugural speech of President Evo Morales, January 200, cited in Laurie and Crespo 2007: 853).

This decision by the United Nations marked a “before” and “after in the issue of water governance worldwide, particularly in the South. Yet, these changes are still to be implemented. The concept of water as a human right is expected to change the traditional market-based approach since it assumes all human beings have equal rights in egalitarian conditions and without discrimination, and it provides those who are lacking safe drinking water and sanitation with a legal recourse as well as a stronger position for negotiation with the water sector, water boards, regulatory institutions, as well as with (economically

or politically) stronger water users in the market.

The human rights approach does not necessarily require that water is free for those who are vulnerable and in need of it. It rather passes back the affordability problem to the state, requiring them to generate policies which guarantee the access to water as a human right, via subsidies or any other instruments, transferring the costs to those who are capable of paying for it. As such it advocates for the responsibility of the state to provide water in a sufficient, affordable, accessible and safe way, and to stimulate those water users with a high economic value to contribute to the provision of water for all.

“There is little scope for users of the South to be able to pay prices that represent the levels of investment needed, the goal of connections for all users is “unrealistic” and public sector subsidies and soft loans are essential for meeting these needs.” Chief executive of Saur, world’s fifth largest water company (in Budds and McGranahan 2003:109).

Finally, a right to water cannot imply a right to an unlimited amount of water. Resource limitations and ecological constraints limit water availability, while economic and political situations often limit water accessibility.

Approach Three: Water as a Right for Humans and other Living Beings - a Socio Ecological Good

Ecuador is the first country in the world codifying The Right of Nature in its new constitution (adopted September 2008): “Nature or Pachamama, where life is reproduced and exists, has the right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes in evolution”. . It then states that “any individual, community, or village may demand the compliance of the public authorities with the laws of nature” and that “the State will encourage individuals and groups to protect nature, and promote respect for all the elements that form an ecosystem “(Article 72).

This is a radical departure from other constitutional regimes in Latin America, in which environmental issues are generally incorporated as “third generation rights”, also called “economic, social and cultural rights” (including the “right to a healthy environment “). The key proponents of this approach are usually ecologists, environmentalists,

community activists and peasant and indigenous movements that fall outside of the public and dominant discourse, but that represent a strong trend in the populations in the South. This approach has gradually begun to be manifest in public policy¹⁷, in the South, particularly Latin America, and these groups have managed to organize alternative events at the World Water Forum.¹⁸

One of the consequences of this approach is that not only the voice of human beings should be acknowledged in the decision making process, but also the voice of nature. We have already insisted that it is appropriate - and urgent - to consider nature as another actor to whom a voice should be given, allowing it to ‘participate’ through the recognition of its expectations, interests, processes and limits. Nature not only provides water, it also needs water to secure its sustenance! Incorporating nature (or natural resources such as water) as an actor is a different way of exercising water governance and management that fosters a focus on sustainability. Neglecting the limits of nature can lead to the increased risk of an epidemic or natural disaster (earthquake, flood, drought) or just the exhaustion of the resources which are necessary for any development process (Miranda, 2004).

At the same time a number of Latin American and European researchers are developing the concept of collective rights, which might well fall within this conceptualization of nature, and consequently also of water. Here water is considered as a common good which is intrinsically linked to the territory, ecosystems and other living things that depend on it (Bustamante, 2010). This perspective is linked to an Andean cosmic vision strongly rooted in the ancient Andean culture and history. The central concern is thus not in the game of demand and supply or social and legal aspects, but rather this approach takes into account the full hydrological cycle within a broader temporal-spatial scale (fluctuations in entire regions or supranational territories), addressing both natural and human dimensions of water, including both stock and flows with a quantitative and qualitative focus (Savenije and Van der Zaag 2008). Three key policy principles are defined here; **equity**, since society needs to defend the use of water resources in the public interest; **ecological integrity** in the preservation of the capacity of the natural environment to regenerate (fresh) water of sufficient

17 Many countries have finally accepted, or are in the process of accepting, that the environment is a legitimate user of water. This means that a certain quantity of water resources should be allocated to environmental uses and the ecosystem.

18 Alternative World Water Forum, Istanbul 2009
<http://alternatifsuforumu.org/en>

quality and; **efficiency** for ensuring ecological integrity without compromising principles of equity (Postel, 1992 in Savenije and Van der Zaag, 2008).

Finally, in this group are those who view resources in nature as non-compensable, claiming that they are non-renewable and there is no economic value that can be given to the loss of natural resources, and as such the principle of the polluter paying compensation for environmental services does not apply. As Bebbington writes "At the end of the day, this is a debate about 'how much it costs'. Assuming, by definition, that everything is exchangeable. We should promote debates on what development, what transformation process we aspire to. Yet, who will promote this? It seems to be that, for this purpose, there are still missing actors". (Bebbington et al, 2009:122)

Approach Four: Water as a Sector

The traditional perspective is to view water as a sector, emphasizing downstream water supply and sanitation, as well as the concerns of industrial users. Upstream resource abstraction is partially included, yet usually only for supply of municipal needs. The issue of financing infrastructure investment and the efficient (and equitable) management of water services is the central concern. The water sector thus defined traditionally excludes on-farm agricultural productivity, institutional support, and non-consumptive resource management (for example, flood controls and dedicated hydropower that is not used for water provision) (ADAMS ET.AL 2009:32). This concept is gradually yielding the need for inter-sectoral management based either on watershed management, or on the management of water as a natural resource. Whether it is watershed management or natural resource management depends on the territorial perspective they have (river basin or city respectively), In both cases the focus is on the integrated management of water for human consumption.

There is a solid body of literature and influential authors from the international private sector and international agencies focused on water from within the city (using a sectoral and/or cross-sectoral approach). It is then approached as a supply and demand equation (principally for human needs and economic activities), where any gaps must be addressed by public and private investment. Supporters of this approach define the main challenges of water management as being addressing unmet need for water, and providing a good quality and efficient service. Water is seen here primarily (though not exclusively) as a service to be paid for, either directly via water tariffs, or indirectly via subsidies. Equity is a subsidiary concern which

must comply with the logic of the market (either as a public company or from the private business or social sector). Regulation of the tariff system is therefore an important component for the system to work.

On the other hand, under this approach and viewed from the perspective of the territory, the term 'Integrated Basin Management' mainly refers to a broad and diverse agenda, including issues such as inter-sectoral water allocation, institutional reform, watershed management, and multi-stakeholder dialogue and participation, as well as global-transboundary-regional-city integration with an interdisciplinary orientation (natural-technical, social sciences and sometimes also community knowledge).

Recently, the issue of compensation for environmental services has been integrated into this approach (within the field of natural resource economics), incorporating a focus on the preservation and maintenance of upstream water (rivers) serving different types of downstream beneficiaries (including mining companies, hydro electricity suppliers, and water service providers in the cities), and the need for the resources to manage the externalities of these economic activities (to restore water quality and recover water sources for future sustainability). Within this group are the newly installed Water Fund in Quito, Ecuador¹⁹, and the Water Fund for Lima and Callao in Peru²⁰, among others in Latin America, both of which are designed and intended to channel resources from major water users in the downstream basin to investments in the conservation and sustainability of the upper basin. The results of these projects are not yet known, but it is the first serious attempt by civil society, the private sector and the state to take joint and concrete action in protecting water reserves and regenerating the hydrological cycle of water.

We can conclude that this last approach is a quite hybrid approach, in an attempt to renovate the classic sectoral approach by incorporating innovations from the other approaches.

The four different approaches to water can be tentatively characterized as follows (see table 2).

19 Fonag, <http://www.fonag.org.ec/portal/index.php?lang=en>

20 Aquafondo, <http://www.fondoamericas.org.pe/2010/11/lanzan-fondo-de-agua-para-lima-y-callao-aquafondo>

Table 2: From Water Governance to “Concertation”: An Analytical Framework

Water concept key elements	Brown Agenda	Brown Agenda	Green Agenda	Blue Agenda
Main concern	Market	Human Beings	Environment, Human and other beings	Sector Mixed
Main Approach	Economic Good	Human Right Social Good	Human and Ecosystems Right Socio Ecological Good	Sector
Target	Clients Providers Consumers	Users Communities Basic human needs	Holistic Ecosystems based	Rural areas, cities and towns Biodiversity
Main actors	Private Companies Governments Inter sectoral actors	Local and Sub-national Government Communities	All beings (human and non human), peasants, indigenous peoples as well as environmentalists Cross sectoral actors	Users and providers Water Sectors coordination Governments
Main democracy approach	Representative Authoritarian	Deliberative Democracy (DD)	DD including the voice of nature and minorities (eg. peasants, indigenous)	Mainly representative
Main governance approach	Elitist, Monopoly New Public Management (NPM)	Democratic, Participative Mixed, competitive	Inclusive, “concertation” Network, Reflexive Mixed	New Public Management Corporate Social Responsibility Monopoly
Main strategy	Negotiation Corruption control Crisis, Conflict management	Dialogue, Deliberation “Concertation” Conflict resolution	Dialogue, Deliberation “Concertation” Consensus Building Transparency	Negotiation, Collaboration Cooperation Regulation, some transparency Win-win strategy
Management Model (mainly..)	Integrated Water Resource Management Private Water Boards Public Private Partnerships (PPP)	Public Water Boards Public-Private Partnerships (PPP) Multi stakeholder partnerships	Water Ecosystem Management (inter related with) Public Water Boards Multi Stakeholder Arrangements (MSA)	Integrated Water Resource Management Basin Management MSAs, (but weakly connected with) Public or Private Water Boards
Territory and City (scale)	City, Companies, Neighborhoods and (household)	City and Neighborhoods	Region, multiple basins (urban and rural, cities and towns) coastal and marine areas	Basin, urban and rural, cities companies and towns
Main technology approach	Large scale infrastructure projects	Large to small scale infrastructure	Ecological sanitation Medium/Small to no infrastructure	Large to small scale infrastructure Ecological sanitation (partial)
Main rationality	Prosperity Growth Free markets	Social justice Pro poor water policies	Environmental justice Integrated Ecosystems Development	Pragmatic, any of the rest
Professionals’ rationality	Business Management	Develop capacities reduce vulnerabilities	Strengthen Resilience	Capacity Building of multiple stakeholders
Disciplines	“Neutral” Scientists Lawyers, Economists and Engineers	Social Scientists, Engineers, Architects, Urban Communities	Pan disciplinary Ecologists and Environmentalists, Urban, Social Scientists	Multidisciplinary from Hydrologists, Engineers to Social Scientists and communities Lawyers and Economists
Personal attitudes and values	Technocrats Bureaucrats	Bureaucrats Commit to change	Advocacy groups Commitment to change	Bureaucrats Technocrats
Economic valuation	Market price Tariffs regulation Polluters pay principle	Tariff Subsidy Polluters pay principle	Non compensable (water has no economic value) Externalities control Payment for environmental services	Tariff Payment for environmental services

Elaborated by Liliana Miranda

5

The Territory, Metropolitan City, Water and Climate Change

Territory and River Basin

In the most literal sense a “territory” is the extent of land (terra) under jurisdiction of a sovereign state, city etc (Oxford dictionary). “Territory” is therewith taken as a legal/political concept, in this sense most often used to refer to the nation state’s territory. A nation state has ownership over all land and water-resources (both surface water, ground water and even rainfall) in its territory. At national state level jurisdiction over land and water are thus coupled, and the principle mechanisms to allocate land and water are legal rights: land tenure rights and water rights (Hodgson 2004:1).

Others take “territory” as being socially constructed. “territory” is then understood as the space appropriated by a social group to ensure their reproduction and the satisfaction of their basic needs, which may be material or symbolic. This appropriation is undertaken by producers, actors and “consumers” of space such as the state, local communities, businesses, and individuals, among others (Scheibling 1994). Or, as Lecocquierre-Steck phrases it: “Territory (...) is that portion of space appropriated by human societies to undertake their productive, social, political, cultural and emotional activities, and at the same time to inscribe their development strategies and further, to express their identity over the course of time through the marking of places”(Lecoquierre-Steck 1999). Also in the socio-political definitions of “territory” we see those that predominantly take a utilitarian perspective, considering territory as a source of profit generation, those taking a more functional perspective, where “territory” is mainly considered as a source of livelihood, or a symbolic culture approach, where the territory also embodies identity, history, tradition and the bonds with the ancestors or spiritual beings (Gimenez 2001). Identity to many people in the South is bound with a notion of “territoriality”, which is associated with a sense of responsibility in relation to that territory. This territory is then defined as the totality of spaces, human groups (including the ancestors), rivers, forests, animals and plants (de Sousa Santos 2007:xx), as expressed in the early cited Ecuadorian constitution. Escobar (1998) further notes that especially societies in which the natural world is integrated in the social world there is a strong attachment to territory, conceived as a multi-dimensional entity resulting from many types of practices and relationships.

In relation to water governance, the river basin has a singular importance as unit of analysis. The river basin as

territorial unit enables us to understand the complexity of the system it composes, being part of and embedded in larger systems. This requires an integrative approach, since the river basin involves the water cycle, the land use as well as a variety of types of relationship and interactions within different levels, from (transboundary) national, regional to metropolitan city which in turn also involves different geographical scales of analysis.

For the Peruvian political economist Dammert Ego Aguirre “territory” does not only include geographical or spatial issues, but also the social groups (either private multinationals, peasants, households, neighborhood organizations, and/or indigenous groups) who own it, who appropriate, who take control of it, as well as, the nation, represented by either national or regional and/or provincial governments with specific jurisdiction authority and the political sphere in general terms. In other words: “territory” is not confined to geographical space, it expresses social and environmental relations. It is a social, economical and cultural construction which incorporates the knowledge of its social groups, each with their own “process of social construction”. As such, territory expresses the social practices of actors with differing capacities, both among themselves and in relation to other territories, and those relations create a changing and dynamic situation and multiple expressions of territoriality. This conceptualization of territory is also expressed in the 1993 Peruvian Constitution which defines the Peruvian territory as the geographic space which encompasses the soil and subsoil, the maritime and island domains as well as the aerial space covering it all. In this territory dynamic interactions and social relations develop, between individuals and social groups, between humans and the ecosystems that sustain, in a historic process that amount to a social and cultural product, a renegotiated territoriality.

The Metropolitan City and its Territory

Until recently the city has often been analysed from a cultural historical perspective, isolated from its surrounding territory. Attempts have been made to explain the urban phenomenon by a way of classification, morphological differentiation and comparing the history of cities to other forms of settlements at different times as well as within different cultures. As such, the city is a knowable cultural object, which allows its differentiation from more simple or primitive forms of human settlement (the camp, pre-urban



rural village, object of cultural anthropology), (García-Bellido 2003). What these studies have in common is that they try to analyze urban society and its reproduction within the city-boundaries, based on a number of arbitrary, predefined criteria of what is quintessentially urban, but neglecting the linkages to structural processes, the wider territory and higher levels of scale. Already in 1972 Castells criticized the underlying assumptions of many of these studies. “Urban culture, strictly speaking, is a myth, since it recounts ideologically the history of the human species ... providing the key-words of an ideology of modernity assimilated in an ethnocentric way, to the social forms of liberal capitalism. The city (which is simply society) is made up of the free initiatives of individuals and groups, which are limited but not determined by the problem of means. And urbanism then becomes the rationality of the possible, trying to link the means at one's disposal to the great objectives one sets oneself (Castells 1972 104-105 cited in García Bellido 2003:3)

These pre-defined characteristics - giving unity within the boundaries of the city, different from its surroundings and separate from and in contrast to the non-urban or rural was often what defined the city, in a tautological definition. However: the countryside, as a non-urban space (rural) or the “non-urban territory” which previously appeared unlimited is now considered scarce and limited. The non-urban territory is necessary for the sustenance of the city, supplying resources (like water) for production, materials for housing as well as green areas for its inhabitants, source of leisure, food of enjoyment, fresh air and oxygen, among others. Urban based production and consumption generates the discharge of waste, waste water and other emissions, causing environmental problems. This means that supplies for the city, now understood as being limited and finite, are decreasing, and the city is sacrificing its environment, replacing and creating a problem in finite systems. If matter and space are finite, it is not possible for to grow infinitely: neither for human populations nor for the resources that sustain them (García-Bellido, 2003). Cities consequently should be understood as inherently open systems, embedded in wider territories. Many cities furthermore nowadays form part of wider metropolitan areas, or are considered metropolitan cities. A metropolitan city is a “major city together with its suburbs and nearby cities and towns, and environs over which the city exercises a commanding economic social influence” (Encyclopedia Britannica 2008). Governance processes in metropolitan cities are more complex, since they involve more levels of government and governance, being more centralized or decentralized, more hierarchical or more participatory. Specific for water governance in a metropolitan city is that different territorial boundaries shaping the water system do not coincide with the boundaries of the metropolitan city or area.

In short, what is important for metropolitan water governance is to realize that:

- The territorial boundaries involving the river basins as a whole are interlinked with the concept of water. Water sources needed for the city's functioning are usually crossing wider administrative boundaries of a city and even the metropolitan city.
- The water availability is determined by different interacting processes which lie beyond the cities' boundaries. This also influences that water related risks and vulnerabilities.
- The relevant territory then involves one or more river basins and a system of cities and towns.
- Although at the national level the right to differing water sources might be clear, this is not necessarily the case at the regional, metropolitan or local level. Who has the right to the use of the aquifers within a cities jurisdiction? What about competing uses of under-surface resources (of the mining industry versus water provision for instance) and who is accountable for pollution and quality of water?
- From a social-cultural perspective the “territory” is socially constructed, and thus not fixed, but open to negotiation and change.
- Actors often look for the unregulated space, for the gaps where the use over a resource in a certain territory is not unequivocally regulated.
- Actors operate in the water governance arena with differing perspectives on water and on water governance (see table 2 for an extensive overview). Part of these differing perspectives have been analyzed earlier using the “green-brown” dichotomy, and from a political ecology perspective expressed in the environmental conflicts due to the way society exploits natural resources, including water and land.

Metropolitan city water governance thus must simultaneously address different territories, with overlapping administrative boundaries. This has to be achieved by multiple actors (being individuals, institutions or socio environmental networks), with different interests, levels of decision making power as well as capabilities.

Water in International Negotiations: a Green, Brown or a Blue Agenda?

In 1976 – at the first UN-Habitat Conference in Vancouver – domestic water supply was for the first time put on the international agenda as a social and political issue. During this conference water was approached as a social good,

which – along with other basic needs – should be provided to citizens. The UN adopted the 1980s as a “Water and Sanitation Decade”, and set “access to clean drinking water and adequate sanitation for all” as the goal of that decade (Castro 2007; Biswas 2010: 158). The MDG set to “half the number of people without sustainable access to safe drinking water and sanitation” is thus a significant reduction of the original target. In the early 1990s the World Bank dubbed the provision of safe drinking water and sanitation as a social good or development need a “brown agenda” issue. The brown agenda – an explicitly urban agenda – was defined as “the immediate and most critical environmental problems which incur the heaviest costs on current generations, particularly the urban poor, in terms of poor health, low productivity, and reduced income and quality of life: lack of safe drinking water, sanitation and drainage, inadequate solid and hazardous waste management, uncontrolled emissions from factories, cars, and low grade domestic fuels, accidents linked to congestion and crowding, and the occupation of environmentally hazard-prone lands, as well as the interrelationships between these problems” (Bartone 1994). The brown agenda is thus an environmental health agenda. This was highlighted to distinguish urban environmental problems from the traditional agenda of ecological sustainability, or “green” agenda (encompassing problems as the loss of biodiversity, global warming, water, air and soil pollution etc). The green agenda has its roots in the series of environmental UN summits. The first UN summit on the environment was held in Stockholm (1972). Two articles from the resulting “Stockholm Declaration” refer to water, mainly from a natural resource perspective. The United Nations Conference on Environment and Development twenty years later (Rio de Janeiro, 1992), had an entire chapter dedicated to the world’s fresh water resources (chapter 18), again with a strong inclination to discuss water as a natural resource, despite the fact that it is also described as a part of the ecosystem, a social and an economic good (§ 18.8). It highlights “drinking water and sanitation”, “water and sustainable urban development” and “water and climate change”. Agenda 21 has a specific chapter on “sustainable human settlements development” (Chapter 7), and a strong lobby from the unions of local authorities resulted in a chapter in Agenda 21 outlining their role in the implementation of Agenda 21. Local authorities were called upon to develop their localized plans of action, the “Local Agenda 21”. Unfortunately many local governments interpreted this call as a call to “green” their existing policies. Only very few understood it as integrating social justice concerns with economic and environmental objectives. It was only in 1996, during the second UN-Habitat conference, that developmental and environmental issues were treated in one document: the Habitat Agenda, though still as two programmatic issues. On the one hand

the Habitat Agenda discusses “Adequate shelter for all” (which includes the environmental conditions in the direct environment essential for environmental health), and “sustainable urban development” which focuses on the ecological sustainability. The Habitat Agenda however leaves the potential conflicts between the green (ecological sustainability) and the brown (environmental health) agenda unaddressed. In the 2009 Report on Human Settlements this is made more explicit “The brown agenda has always tended to assume the green agenda, to consume and to dominate it...The brown functions of a city generally consume and degrade the green resources” (Habitat 2009:115)

McGranahan and Satterthwaite have argued that these two agendas are not only different in scope, but also different in objectives, scale, time-frame and even proponents. “The critical proponents of the “green agenda” are the environmentalists, whose principle concern is ecosystem health, and who are concerned with the delayed effects of human activity at the regional and global scale and the impacts for future generations. The typical proponents of “the brown agenda” are the urbanists and development workers whose main concerns are human health and social justice, and who are more preoccupied with the immediate problems at the local level, especially those suffered by low-income groups (McGranahan and Satterthwaite 2000). They summarised these two agendas as follows (see table 3).

In general, one can say that environmental health burdens shift when cities get wealthier. The “brown” agenda - thus very local and directly health threatening - issues are most prevalent among the poor and in poor cities, whereas in high income cities people are more concerned with the cumulative effects of long-term exposure to pollutants. Here the focus is more on the consequences of urban production and consumption on the global life systems (McGranahan and Satterthwaite 2000). In middle income cities problems are mostly related to intense industrialization coupled with few environmental controls on polluting wastes and emissions. This mostly affects the city as a whole and its direct environment. Thus, in 1996 McGranahan wrote: “With increasing affluence environmental burdens tend to become spatially more diffused, temporarily more delayed and causally less directly threatening” (McGranahan 1996). Yet also in middle- and even in high-income cities poor people may be exposed to the direct health threatening living conditions, since intra-city differentials in income often correlate with intra-city differentials in environmental health conditions (Songsore and McGranahan 1993). In low-income cities the population in general and the urban poor in particular are not proactive on green agenda issues, since these are not



Table 3: Stereotyping the two environmental agenda's

First order impact	The 'Brown' Environmental Health Agenda	The 'Green' Sustainability' Agenda
	Human health	Ecosystem health
Timing	Immediate	Delayed
Scale	Local	Regional and global
Worst affected	Lower-income groups (meeting the needs of the present generations)	(without compromising the needs) of Future generations
Attitude towards Nature	Manipulate to serve human needs	Protect and work with
Attitude towards People	Work with	Educate
Attitude towards Environmental services	Provide more	Use less
Water issues	Overexploitation and disturbance of the hydrological cycle	Inadequate availability, inequitable access, pollution

Adapted from: McGranahan (2008)

part of their daily life. Furthermore, when there is a conflict of interest (i.e. workplace vs. GHG emissions or protection of a natural reserve) a clash might arise to the point of confrontation against environmental movements, NGOs, youth activists, consultants and university experts, mainly middle class people, who are usually accused (by rich as well as poor) of been “against” development. There are indications that locally driven processes that are based on broader stakeholder involvement and measures that support cross sectoral action within local governments such as Local Agenda 21s, can combine both agendas fruitfully (McGranahan, Miranda Sara et al. 2001). However both the constraints and the opportunities for such processes remain under researched.

Climate Change

In most general terms, climate change consists of gradual changes in mean temperatures and mean precipitation levels, which in turn results in sea level rise and will increase the frequency and intensity of extreme weather events. All of these changes trigger subsidiary effects, of which many can become directly health threatening if no adequate measures are taken. Among the expected effects are an increase in prevalence and intensity of storms and cyclones, intensity of rainfall in most areas, increased occurrence of high sea levels, but also expansion of the areas affected by drought and an increased frequency and intensity of heat waves over most landed area (IPCC-WGII 2007) (Satterthwaite

and Moser 2008) and (Dodman 2010) systematized the expected effects of these climate changes on urban areas, and their consequent health impacts (Table 4).

If we analyse this table through the “green” and “brown” agenda lens, it is clear from the first column that climate change puts the life support system further under threat. Desertification, salinization and soil erosion reduce the chances of the current generation as well as future generations to fulfil their needs. With respect to water we can observe that changes are expected in both water availability and water quality, which can be classified as a green agenda issue (threatening the health of ecosystems) as well as a brown agenda issue. Yet whether or not the expected effects will turn into a disaster is greatly dependant on the quality of the built environment and environmental infrastructure, and thus a brown agenda issue. It is the layout of a settlement and the maintenance of the drainage system that determine where floodwaters can go. Local run-off increases the more the city is paved and natural channels are blocked, therewith increasing risk of floods. The better the sewerage and drainage system, the lower the risk of flood damage after heavy rainfall (Satterthwaite and Moser 2008), hence the remark quoted earlier that “the urban water sector will deliver many of climate changes impacts through the floods, heavy rainfall events, or droughts.” (Danilenko, Dicskon et al. 2010). This brings us back to the importance of water governance. With growing emphasis on the expected effects of climate change we tend to forget that it is through the governance



Table 4: Some likely impacts of climate change on ecosystems, water, cities and health

Change	Impact on lifecosystems and agriculture	Water	Urban impacts	Health impacts
Increasing mean Temperature	Species range shifts, Loss of wetlands, Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks	Effects on water resources relying on snow melt; effects on some water supply	Increased energy demand for heating / cooling; worsening of air quality	Changed distribution of disease vectors Increased vulnerability to respiratory diseases
Increasing mean Precipitation	Damage to crops, soil erosion, water-logging, water-quality problems	Increased water availability in moist tropic and high latitudes, zones, decreased water availability in mid and semi-arid low latitudes	Increased risk of flooding; increased risk of landslides; distress migration	Increase in water-borne and water-washed diseases; food shortages and malnutrition
Extreme rainfall / tropical cyclones	Damage to crops, trees and coral reefs	Adverse effects on quality of surface and groundwater; contamination of water supply, disruption of water supply	More intense flooding; higher risk of landslides; disruption to livelihoods and city economies, outage of power supplies	Higher levels of mortality and morbidity; loss of income and assets
Drought	Land degradation, wildfire risks, lower crop yields, life-stock deaths	Increased water stress	Water shortages; higher food prices; disruption of hydro-electricity	Higher prevalence of water-borne and water-washed diseases; food shortages
Heat- or cold-waves	Reduced crop yields in warmer regions, wild-fire risk, wider range for disease vectors.	Increased water demand; water quality problems, e.g., algal blooms	Short-term changes in energy demand	Mortality from extreme heat or cold
Increased incidence of extreme high sea level	Salinisation of irrigation water, estuaries and freshwater systems	Decreased freshwater availability due to saltwater intrusion	Loss of property and enterprises, damage to tourism, damage to possessions and infrastructure from rising water tables and storm surges	Coastal flooding increasing risk of death and injuries, health problems from salinated water

Source: Adapted from IPCC-WGII 2007, Satterthwaite and Moser 2008 and Dodman 2010

mechanisms currently in place that we have to confront the effects. Yet also when it comes to climate change the discussions so far have been dominated by natural scientists and the green agenda perspective. This has not only produced a bias towards the impacts on natural systems over that on the built environment in scientific knowledge, but also has led to National Adaptation Plans of Action being mainly developed by ministries of environment, not by ministries of housing or public works, and even less by local governments (Satterthwaite and Moser 2008). Consequently mitigation measures are higher on the agenda than adaptation efforts. Simply posed, we can consider the mitigation (i.e. all efforts to reduce greenhouse gas emissions) a green agenda component. Adaptation is preparing for the consequences of climate change. There are possibilities to develop “pro-poor” adaptation strategies, provided that they focus on reducing the vulnerabilities of the poor. This often implies in-situ adaptations, improving housing conditions, quality of drainage systems and storm-water management etc. If this is the case, adaptation covers brown-agenda issues. For adaptation to be effective it must be locally driven, rooted in the particularities of each and every city (Satterthwaite and Moser 2008), based on a shared analysis of the problem, and the challenges and the responsibilities of each and every actor.

Risks and Vulnerabilities

In congruence with the presented stereotypes of the green and brown agenda, one can also identify schools of thoughts on “risks” and “vulnerabilities”. Researchers from the natural science or green perspective tend to focus on risks, whereas those from the social science or brown perspective prefer to speak about vulnerabilities. “Risk” then is understood as the result of the exposure to natural or man-made hazards, whereas vulnerability represents the set of socio-economic factors that determine people’s ability to cope with stress or change²¹ (Brooks 2003:10).

The understanding of the climate pattern ENSO (El Niño Southern Oscillation) can serve as an example. Over the last 40 years our understanding of El Niño has evolved from taking it as a purely natural phenomenon (i.e. a green perspective) into a potential disaster when its impacts are affecting society. It is not only the physical event that contributes to the damage, the economic and social losses. Risks and vulnerabilities are socially constructed. This social construction of risks is a complex social process which obliges us to ask ourselves as society how to increase capacities to reduce the vulnerabilities and consequently reduce the risks. If we consider that social construction of risk bounded by the development process and lifestyles, by our modes of consumption and production, it is thus at this level that we need to intervene. Consequently the analysis and identification of hazards and vulnerabilities to define the levels of risks should take all factors related to the process of the construction of this risks into account. Furthermore, with climate change the distinction between hazard and vulnerability becomes blurred, because they are the consequence of interdependent natural and social cycles. Climate change hazards are hazards we have created through our own practices. The in turn generate new hazards, new processes of erosion, that generate more inundations, especially when increasing urbanization has not been prepared to create overflows for increasing rainfalls.

This brings us back to the importance of “concertation” in water governance. With growing emphasis on the expected effects of climate change we tend to forget that it is through the governance approaches and mechanisms currently in place that we have to confront these effects. The quality and pro-activity of water governance in metropolitan cities will highly determine the water related risks and vulnerabilities.

21 To complicate matters even more climate change scientist tend to view vulnerability in terms of likelihood of the occurrence and impacts of weather and climate related events. This is exemplified by the IPCC Third Assessment Report defining vulnerability as “the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity” (IPCC 2001, p.995 cited in Brooks 2003:5).

6

Conclusions and Research Gaps to be Filled

In theory the tension between the green and brown agenda objectives can be reconciled, also with respect to city water provision to all actors (including nature as an actor in its own right). This review has highlighted the importance of a careful analysis of the water governance system, its actors, interests, values and processes in each locality. We have also highlighted the importance of not only looking at the city level, but take the broader territory into account. Based on this review we rephrase Castro's original definition of water governance into the following definition (italics are additions by the authors): 'In practice, water governance consists in the interaction between governments at multiple levels, large to small businesses, political parties, civil and other organizations representing sector interests (e.g. workers' unions, religious organizations, peasant and indigenous movements, neighbourhood leaders, etc.), international agencies (e.g. international financial institutions other agents of the process of "global governance"), NGOs, and other relevant power holders as well as including the voice of nature. These actors (human and non-human) are involved in continuing dialogues, debates and in socio-ecological and political confrontations around how water, river basins and essential water services should be governed, by whom, with whom and for whom. These confrontations are at the heart of the process of democratic water governance, which is characterized not only by dialogue and negotiation but also, unfortunately, by growing uncertainty and protracted social, ecological and political conflicts that may progressively lead to a "concertative" process in order to reach some kind of agreement to move on into implementation' (Based on Castro, 2007).

As overarching Research Question we formulated:

To what extent are the metropolitan city's key actors - individuals, institutions, and social networks - capable of reaching socially supported agreements (or "concertar"²²) generating changes in the water governance approach in their city, and to what extent do they take the expected consequences of climate change into account?

22 "Concertación" is word which has no proper translation into English. We have discussed the concept elsewhere (Miranda and Hordijk 1998). It refers to the process of reaching agreements for joint action through dialogue and deliberation.

To answer this question we have developed the following sets of sub questions:

Sub-question 1 & 2

1. Who are the key actors - individuals, institutions, and social networks – involved in the water governance of metropolitan cities and what capacities do they have that will allow them to deal with water-related climate change vulnerabilities?

And

2. What are the water-related climate change vulnerabilities according to the different actors involved in water governance in the case study cities? To what extent do these vulnerabilities exemplify tensions and opportunities to harmonize the interactions between nature, territory and cities? (reconciling the green and the brown agenda)

It is important to acknowledge that the "best" governance approach is the one which works for those being governed at that particular place and point in time. It has become evident that no single water governance model for city water provision exists. There is no one-size-fits-all model which is necessarily the "best" option for every city or locality. Water governance models need to be specifically selected for every context and territory, and a model which has the potential to benefit the poor should somehow incorporate their participation in decision making.

This leads us to the following Sub-questions 3 & 4:

We have argued that the existing water crisis, characterized by both open and latent conflicts over a scarce source of life for all living beings, will exacerbate as a consequence of climate change. We have also argued that locally rooted, "concerted" strategies and plans to confront those challenges have the chance to overcome the tensions between ecological sustainability and environmental health, and even reach synergies in the adaptation agenda, fostering higher levels of equity.

3. What are the outcomes of water governance efforts so far (analyzed from a green – brown agenda perspective), and what capacities need to be strengthened to increase the potential to deal with uncertainty and adapt vis-à-vis the water-related?



4. What scenarios regarding water do key actors in the case study cities develop? What is the official and socially acknowledged level of decision-making power of those actors in water governance, with regard to the plausible metropolitan city scenarios, and to what extent are they capable of influencing the main approach to water governance in order to build up a shared and/or “concerted” approach?

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References

- ADDAMS, L., BOCCALETTI, G., KERLIN, M., & STUCHTEY, M. (2009). Charting our Water Future, Economic frameworks to inform decision-making. Report for the 2030 Water Resources Group.
- AQUAFONDO, Lima <http://www.fondoamericas.org.pe/2010/11/lanzan-fondo-de-agua-para-lima-y-callao-aquafondo>
- BARTONE, C. e. a. (1994). Rapid urban environmental assessment. Lessons from cities in the developing world. Urban management programme discussion paper. Washington, World Bank. 1
- BATCHELLOR, C. (2007) Water governance literature assessment, International Institute for Environment and Development (IIED). <http://www.iied.org/pubs/pdfs/G02523.pdf>
- BAUD, I. (2000) Collective action, enablement and partnerships: Issues in Urban Development. Speech at the Free University of Amsterdam, October 27, 2000.
- BAUD, I., DHANALAKSHMI, R. (2007) Governance in urban environmental management: Comparing accountability and performance in multi-stakeholder arrangements in South India. *Cities*, 24, 133-147.
- BEVILLAQUA, N. (2010) "La re-estatización del servicio de agua potable en la argentina", <http://www.revista2010.com.ar/medio-ambiente/la-reestatizacion-del-servicio-de-agua-potable-en-la-argentina-.php>
- BEBBINGTON A. (2009), Actores y ambientalimos: Continuidades y cambios en los conflictos socio-ambientales en el Perú, in DE ECHAVE, J., HOETMER, R., PALACIOS, M., (eds.) Neoliberalismo, minería y las luchas por el territorio: Actores, estrategias y alternativas. Lima: CONACAMI, Programa Democracia y Transformación Global, and Cooperación.
- BISWAS, Asit K. (2010) Water for Thirsty Urban World, *Brown Journal of World Affairs*.
- BRAGA, B., REBOUCAS, A. Da C., & TUNDISI, J.G. (2006) Águas Doces no Brasil, Capital ecológico, uso e conservacao. Brasil, Organizacao y Coordenacao Cientifica.
- BOELEN, R., G. DÁVILA, et al. (1998). Searching for equity: conceptions of justice and equity in peasant irrigation, Van Gorcum, Assen.
- BUDDS, J. and MCGRANAHAN, G. (2003) Privatization and the Provision of Urban Water and Sanitation in Africa, Asia and Latin America. Human Settlements Working Paper Series Water No. 1. IIED, London. http://www.iied.org/urban/documents/water_dp1.pdf
- BUSTAMANTE, R. (ed.) (2010) Lo colectivo y el agua: Entre los derechos y las practicas. Lima, Instituto de Estudios Peruanos.
- CASTAÑEDA, M. (2005) Comunicación y Desarrollo Local. Lima, Asociación de Comunicadores Sociales Calandria.
- CASTELLS, (1972-74): La question urbaine, F. Maspero, 1972; v. esp.: La cuestión urbana, Madrid, Siglo XXI, 1974.
- CONCERTACIÓN, <http://www.concertacion.info> (accessed 16/02/2011)
- DAMMERT EGO AGUIRRE M. (2008) Dialéctica del territorio / esquizofrenia del lugar Perú y Suramérica ante los desafíos de la globalización, Universidad de San Marcos, Lima, Peru
- DANILENKO, A., DICKSON, E., & JACOBSEN, M. (2010) Water Working Notes: CLIMATE CHANGE AND URBAN WATER UTILITIES: CHALLENGES & OPPORTUNITIES. Washington D.C., World Bank.
- DE SOUSA SANTOS, B (ed.) (2007). Another knowledge is possible: Beyond northern epistemologies. New York, Verso Books.
- DODMAN, D. (2010) Risk and Resilience in Urban Areas: Responding to the climate challenge. Presentation at the University of Amsterdam, Amsterdam, April 14, 2010.
- DUBLIN PRINCIPLES (1992) <http://www.wmo.int/pages/prog/hwrrp/documents/espanol/icwedecs.html>
- ESCOBAR, A. (1998). "Whose knowledge, whose nature? Biodiversity, conservation, and the political ecology of social movements." *Journal of political ecology* 5(1): 53-82.
- ESREY, S., ANDERSSON, I., HILLERS, A., SAWYER, R. (2000) Closing the Loop, Ecological Sanitation for Food Security!. Stockholm, Swedish International Development Cooperation Agency.
- FERNÁNDEZ-MALDONADO, A.M., (2007) Fifty years of barriadas in Lima: revisiting Turner and De Soto. Paper presented at the ENHR 2007 International Conference 'Sustainable Urban Areas', Rotterdam, July 25-28, 2007.
- FONAG, <http://www.fonag.org.ec/portal/index.php?lang=en>
- GIARRACCA, N. (2006) Territorios en disputa: los bienes naturales en el centro de la escena. *Revista Realidad Económica*, 226, 51-68.
- GIMÉNEZ G, 2001 Cultura, territorio y migraciones. Aproximaciones teóricas, *Alteridades*, vol 11, no. 22, pp 5-14, <http://redalyc.uaemex.mx/redalyc/src/inicio/ArtPdfRed.jsp?iCve=74702202>
- GLOBAL WATER PARTNERSHIP, www.gwp.org
- GREEN, C., (2007) Mapping the field: the landscape of governance, London, Middlesex University. SWITCH Report online available at http://www.switchurbanwater.eu/outputs/pdfs/W6-1_DEL_Landscape_Governance.pdf
- GUDYNAS, E. (2009) The Political Ecology of the Biocentric Turn in Ecuador's New Constitution, *Revista de estudios Sociales*, 32, 34-46. http://www.scielo.unal.edu.co/scielo.php?script=sci_arttext&pid=S0123-885X2009000100003&lng=en&nrm=iso
- GUDYNAS, E. (2007) Conflictos Ambientales en Zonas de Frontera y Gestión Ambiental en América del Sur. *Gestión Ambiental*, 13, 1-19.
- HODGSON, S. (2004) Land and water - the rights interface. *FAO LEGAL PAPERS #36*. Rome, Food & Agriculture Organization of the UN (FAO).
- IPCC-WGII (2007). Climate change 2007: Impacts, adaptation and vulnerability. Contribution of the Working Group II to the Fourth Assessment report of the Intergovernmental Panel on Climate Change Summary for Policy Making
- Istanbul Water Consensus for Local and Regional Authorities, WWF5 (2009) http://www.worldwatercouncil.org/fileadmin/wwc/World_Water_Forum/WWF5/Istanbul_Water_Consensus_Eng_Final.pdf
- LAURIE, N. (ed.) (2007) Themed Issue: Pro-poor water? The privatization and global poverty debate. *Geoforum*, 38.
- LECOQUIERRE-STECK, B. (1999) Pays émergents, paroisses recomposées: Repenser le découpage du territoire Emergent lands, reconstruction of parishes: rethinking the territory division. Paris, Editions l'Harmattan.
- LEITMANN, J. (1994) Rapid urban environmental assessment. Lessons from cities in the developing world. Urban management programme discussion paper. Washington D.C., World Bank.
- LÓPEZ JIMÉNEZ, S. (2008) El zorro de arriba. La gobernabilidad. La Republica, August 8. <http://blog.pucp.edu.pe/item/28049/la-gobernabilidad>

- McGranahan 2008 "Citizens at Risk: Environmental Health", Lecture in the INDRA lecture series 2008/2009, University of Amsterdam, 30th of October 2008
- MCGRANAHAN, G., BALK, D., et al. (2007) The rising tide: assessing the risks of climate change and human settlements in low elevation coastal zones. *Environment and Urbanization*, 19, 17.
- MCGRANAHAN, G., MIRANDA, L., SATTERTWAITHE, D., & STELLA VELASQUEZ, L.S. (2001) Striving for Good Governance in Urban Areas: The Role of Local Agenda 21s. Opinion World Summit on Sustainable Development. London, International Institute for Environment and Development (IIED).
- MCGRANAHAN, G., & SATTERTWAITHE, D. (2000) Environmental Health of ecological sustainability? Reconciling the Brown and Green Agendas in urban development' in Pugh C. Sustainability in Cities Developing Countries: Theories and Practice at the Millennium. London, Earthscan Publications.
- MERLINSKY, M. (2009) Atravesando el Río: La Construcción Social y Política de la Cuestión ambiental en Argentina. Thesis, Paris, Université Paris 8.
- MIRANDA, L. (2004) Cities for Life revisited: capacity-building for urban management in Peru. *Environment & Urbanization*, 16, 294-262. <http://eau.sagepub.com/content/16/2/249.abstract>
- MIRANDA, L. and M. HORDIJK (1998). "Let us build cities for life: the national campaign of Local Agenda 21s in Peru." *Environment and Urbanization* 10(2): 69-102.
- MIRANDA, L. & STEINBERG, F. (2005) Local Agenda 21, capacity building and the cities of Perú. *Habitat International*, 29, 163-182.
- MUSETTA, P. (2010) Los Conflictos por Agua en América Latina, CEPI Documento de Trabajo No. 23. México, Centro de Estudios y Programas Interamericanos.
- PARRY, M. L., CANZIANI, O.F., PALUTIKOF, J.P., VAN DER LINDEN, P.J. & Hanson, C.E., (Eds.) (2007) Climate change 2007: Impacts, adaptation and vulnerability. Contribution of the Working Group II to the Fourth Assessment report of the Intergovernmental Panel on Climate Change. Cambridge, Cambridge University Press.
- POSTEL, S. (1992) Last Oasis, Facing Water Scarcity. W.W. Norton, New York.
- SABATINI, F., SEPÚLVEDA, C. (1997) Asociaciones de canalistas en Chile: Tradición, poder y legalismo en la gestión de conflictos. In: SABATINI, F. & SEPÚLVEDA, C. Conflictos Ambientales.- Entre la Globalización y la Sociedad Civil. Santiago, CIPMA.
- SASSEN, S. (2009) Bridging the Ecologies of Cities and of Nature. Paper presented at the 4th International Conference of the International Forum on Urbanism (IFoU) 'The New urban Question: Beyond Neoliberalism', Delft, November 26-28, 2009.
- SATTERTWAITHE, D., & MOSER, C., (2008). Towards pro-poor adaptation to climate change in the urban centres of low and middle income countries. Human Settlements Discussion Paper Series Climate Change and Cities Discussion Paper 3. London, IIED.
- SAVENIJE, H.H.G; VAN DER ZAAG, P. (2008) Integrated water resources management: Concepts and issues. *Physics and Chemistry of the Earth*, 33, 290-297.
- SHAH, A. and M. SCHAFFER (2004). "Combating corruption: look before you leap." *Finance & Development* 41(4).
- SCHEIBLING, J. (1994). *Qu'est-ce-que la géographie*. Paris, Hachette Littérature.
- SONGSOORE, J. and MCGRANAHAN (1993). "Environment, Wealth and Health: Towards an analysis of intra-urban differentials within the Greater Accra Metropolitan Area, Ghana." *Environment and Urbanization* 5(2): 10.
- STEINS, N., EDWARDS, V. (1999) Synthesis: Platforms for collective action in multiple-use common-pool resources. *Agriculture and Human Values*, 16, 309-315. <http://www.springerlink.com/content/k61275428w87605u/fulltext.pdf>
- SWYNGEDOUW, E. (2004). *Social power and the urbanization of water: flows of power*, Oxford University Press, USA.
- TORTAJADA, C., (2010) Water Governance: a research agenda, *International Journal on Water Resources Development*, 26, 309-316.
- UNCHS (1996) *Global Report on Human Settlements*, Oxford University Press, Oxford
- UNDP, Water Governance Facility, <http://www.watergovernance.org/>
- UNESCO (2006) *Water, a shared responsibility*, UNESCO/Bergham Books, Barcelona
- UN-HABITAT. (2009) *Global Report on Human Settlements 2009. Planning Sustainable Cities*, Nairobi, UN-Habitat.
- WIENER, R Dudas y mitos de la privatización del agua <http://rwiener.blogspot.com/2006/07/dudas-y-mitos-de-la-privatizacion-del.html> , accessed 02.10.2011
- Wikipedia, <http://en.wikipedia.org/wiki/Water> del 08/02/2011
- World Bank (2010) *Managing Land and Water to Feed Nine Billion People and Protect Natural Systems*, in *World Development Report 2010*. Washington D.C., World Bank, 132-187.
- World Water Forum <http://www.worldwaterforum6.org>
- WRG (Water Research Group) 2009 *Charting our water future, economic frameworks to inform decision making*, http://www.2030waterresourcesgroup.com/water_full/Charting_Our_Water_Future_Final.pdf , accessed 14.03.2010
- XIMENA GONZÁLEZ SERRANO, M., ROCHA, J. y MARTÍNEZ, N. El agua escasea, las transnacionales se enriquecen y el derecho lo permite. Colombia, Defensoras de Derechos Humanos Colombia <http://www.medioambiente.co/Sitio%20convencion/files/DA.pdf> , accessed 11.02.2011