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THE LIMITS OF IWRM-INSPIRED REFORMS IN BRAZIL

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ABSTRACT: There have been systematic attempts in the last decade in Brazil to incorporate some internationally established concepts, such as catchment integration and public participation, into the regulation of water use and conservation. However, the opportunity to advance water management has been frustrated by the internal contradictions of the regulatory reforms. A case study in the Paraíba do Sul River Basin demonstrates the difficulties to achieve integration and environmental sustainability. The fundamental problem lies in the failure to associate the causes of environmental degradation with social inequalities and political asymmetries.

KEYWORDS: institutional water reforms, IWRM, water charges, Paraíba do Sul.

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INTRODUCTION

Water control and management were important elements of the Brazilian industrialization in the mid 20th Century, particularly through heavy investments in hydropower, water supply and irrigation. Repeating the favourable economic circumstances of the 1950s and 1970s, the Brazilian economy has again the prospect of sustaining an annual rate of growth above the average of the last three decades (The Economist 14 Apr 2007). As in the past, the exploitation of rivers, lakes, groundwater and the coast continues to be highly strategic in economic development terms, although pressures on the use of water resources are counterbalanced by demands for the restoration and conservation of water bodies. There are mounting conflicts associated to the use and conservation of water, inasmuch as the country continues to require additional investments in electricity, freshwater and sanitation. The growing politicisation of water is revealed, for example, in the controversies about hydropower projects in the heart of the Amazon and the transfer of water from the São Francisco River to northern catchments in the semi-arid region. Water is also politicised due to the considerable unevenness across regions and neighbourhoods in the provision of public services of water and sanitation. Despite similar problems, the main difference between past and present experiences of water management is the existence of a comprehensive institutional framework that regulates users and coordinates responses. The new regulatory framework was introduced in the 1997 with the approval of the Water Act - law 9433/1997 - and extends from the federal government to state authorities and catchment organisations.[1]

To understand the opportunities and constraints of the ongoing water reforms in Brazil, it is necessary to realize that the contemporary agenda has been directly influenced by a set of guidelines advanced by multilateral agencies (for instance, the World Bank, IADB and UNDP). One of the leading principles of the emerging 'doctrine' of water regulation is the concept of integrated water resources management (IWRM), which has been defined as "a process which promotes the co-ordinated development and management 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" (Global Water Partnership

[1] There are currently more than 140 catchment committees and 10,000 professionals involved in the National Water Resources Management System (SINGREH).

2003). The main purpose of this article is to discuss to what extent the IWRM-inspired reforms have been able to respond to pressing demands for environmental sustainability and social justice in relation to water use and conservation, given that "the institutionalization of water norms [in Brazil] has most strongly reflected the IWRM framework" (Conca 2006, 309). Based on the results of a case study, it will be argued that, despite repeated claims of success by the government and catchment representatives, the new approaches have underestimated the socionatural complexity of the catchment, which ended up reinforcing long-established distortions. It will be shown that most of public mobilisation has been tied up to a single issue - the introduction of bulk water charges - which has been contentious enough to magnify the contested basis of water use in the catchment.

THE INTRINSIC LIMITATIONS OF IWRM

Water problems have become part of everyday news bulletins, which are translated into growing public awareness of issues like climate change and desertification, but also problems more closely related to their homes, like water supply, flooding and river pollution. The rising concern with water management is reflected in the work of academics and universities (for example, in Britain alone there are more than 60 master degrees on water-related topics). Despite the sheer deluge of information in modern society, the debate on water problems is certainly not new. In fact, the economic and social dimensions of water were already recognised by economists and philosophers in the 19th Century (e.g. J.S. Mill). But it was really in the first decades of the 20th Century that a systematic body of knowledge was developed to organise engineering interventions and foster integrated responses. The notion of catchment management was initially applied to the development of water infrastructure in the United States during the economic depression in the 1930s (e.g. the TVA experience). The underlying assumption was that water should be connected to economic development and should be the object of technological and financial investments (the major part borne by the national State). The notion that water could facilitate national development influenced the construction of dams and expansion of water infrastructure after the Second World War (e.g. some of the largest engineering works were built in Brazil in the 1970s). During this period, however, public policies were mainly restricted to the coordination of economic targets and public investments.

This initial phase of water management was characterised by structural interventions and a central focus on economic growth, with environmental conservation as only a very secondary objective.

Before too long, it became evident that the single economic justification for the construction of water projects was leading to operational inefficiencies and widespread negative impacts. Concepts and techniques started to be revisited in the end of the 1970s and benefited from an increasing awareness of the social and environmental consequences of conventional interventions. Market liberalisation and the declining investment capacity of the State provided the economic reasoning for a shift from structural measures to non-structural responses. The goal of integration was emphasised further and seen as an antidote to a perceived fragmentation of policies and projects, as well as to the lack of dialogue between public agencies and private water users. In theory, instead of the past attempt to integrate economic growth with water engineering, the new approaches advocated a broader integration of water use and environmental conservation, as well as higher management flexibility and direct forms of stakeholder involvement. Similarly to the previous phase of water management, the new ideas also emanated from northern countries and have exerted formidable influence on legal and administrative reforms around the world (particularly since the 1990s). The concept that better epitomises the current attempts to improve water management is probably IWRM, seen by many as a panacea in the face of challenging socioeconomic and environmental demands. In Brazil, IWRM has served as an explicit and implicit reference for the introduction of new federal legislation in 1997 (and subsequent state legislation), for the redesign of federal and state bureaucracies, and the involvement of non-governmental organisations and individuals in policy-making. Among numerous innovative aspects of the new regulatory framework, two central elements are widely mentioned: one is public participation on catchment committees; the other is the expression of the economic value of water via water pricing and water charges.

To discuss the implementation of IWRM in Brazil, particularly regarding public participation and the introduction of water charges, this paper will focus on the Paraíba do Sul River Basin (henceforth, PSRB), one of the most advanced examples of water regulatory reforms in the country. The next pages will demonstrate how these two pillars of the new water regulation have been closely connected in the catchment. It will also discuss how the reform of water regulation has been contained by the

perverse impact of market-based policies, such as water pricing, while other important sociopolitical demands remain unsolved. The achievements and failures of the PSRB experience epitomise the difficult challenges of the new water 'paradigm' (as defined by Formiga-Johnsson et al. 2007). However, to understand the contradictions of contemporary water regulation in Brazil it is first necessary to critically evaluate some problems firmly entrenched in the IWRM rationale and not normally acknowledged. For explanatory purposes, it is possible to identify three main weaknesses of the IWRM proposition, namely epistemological, operational and political limitations.

Despite numerous efforts to conceptualise integrated water management in recent years, its epistemological grounds continue unclear and uncertain. Most IWRM scholars persistently insist on the abstractedly defined necessity to integrate plans and procedures (e.g. Bongartz 2003, Faby et al. 2005; Hendry 2006), but it is not easy to grasp what exactly should be prioritised and integrated (Biswas 2008). The literature presents IWRM as a vague combination of wishful thinking (i.e. something needs to be done to solve current water problems and integration is the answer) and exhortative measures (i.e. all sectors and groups should be involved in shared problems). Some reactions to the elusiveness of the concept recommend a tacit association of IWRM with other regulatory mechanisms (e.g. the planning system in England, cf. Kidd and Shaw 2007). Notwithstanding the debate, there remains a systematic lack of conceptual accuracy, which has consequently led to the impracticability of the IWRM-inspired regulation. There is an obvious parallel here with similar concepts like sustainability and sustainable development, where only a superficial level of agreement is reached, whilst the tangible consequences of those expressions are ambiguous and contested.

The difficulty to operationalize IWRM is a direct consequence of its imprecise conceptualisation. Water management is essentially about choosing one between equally important demands, but elusive claims for wide-ranging integration are unable to offer much help. The weakness of the IWRM concept makes it an easy prey of fashionable multidisciplinary academic studies, which normally establish a trivial link between variables and processes of the water systems without really understanding the socionatural complexity of water problems. The result is that academic assessments supporting IWRM initiatives are often employed to legitimise pre-established objectives, instead of boosting a transparent and democratic selection of management responses. Furthermore, the limited resources of public agencies responsible for

overseeing IWRM restrict the range of regulatory solutions to a relatively short list of 'manageable' options (Kirk et al. 2007). In practice, that means a continuation of previous approaches and incapacity to produce innovative answers to water problems. A related operational hindrance is the administrative division in management of IWRM programmes, which leads to distortions and lack of joint thinking between public and private agents (Fischhendler 2008). In some cases, the objectives of integration and consistency are manipulated by higher authorities to overrule the decisions of catchment organisations (van der Zaag 2005), despite the fact that the new agenda of water management includes decentralisation as one of its central goals.

It is crucial to recognize that the epistemological and operational limits of IWRM have a more elemental cause, which is precisely the political naivety that characterises the ongoing water reforms. Most of the literature on IWRM still fails to acknowledge that political differences between social groups have a striking influence on water allocation and the distribution of negative impacts. It has been observed elsewhere that a critical limitation of IWRM is the entrenched mindset of water managers and hydrologists, who consider socioeconomic and political demands as a deviation from the 'purist' goals of water management (McCulloch and Ioris, 2007). For this group of 'purists', the gap between IWRM prescription and practice is sometimes attributed to 'politics', as if it were only a sort of circumstantial nuisance to be overcome or avoided (Blomquist and Schlager 2005). Such approaches fall short of addressing the full extent of the political nexus between economic growth, environmental degradation and social demands. Nonetheless, social and economic inequalities are integral features in a politicised environment, such as in Brazil, where conflicts over resources are still linked to systems of political and economic control established in the colonial era (Bryant 1998). The politicisation of water resources in Brazil is translated, for example, into an uneven distribution of public water services or the ordinary exclusion of weaker groups from the decision-making process (Zhouri and Oliveira 2005).

The remaining of this article will examine the PSRB, where old management approaches, based on supply augmentation and river engineering, are being replaced by new practices, based on demand management and largely inspired by IWRM objectives. In recent times, some publications have addressed conflicts and injustices related to water development in Brazil, however, less attention has been paid specifically to the outcomes of the new water regulatory framework introduced a

decade ago. Most authors have overlooked the authoritarian implementation of water management reforms, as well as the absorption of the new regulatory tools by economic priorities. The case study in the PSRB will demonstrate that the internal limitations of IWRM-informed regulation have in effect prevented the achievement of satisfactory responses to the grave environmental and social problems related to water in the catchment.

THE PARAÍBA DO SUL RIVER BASIN: A CANDIDATE FOR IWRM?

The PSRB is located in the Southeast of Brazil in one of the country's most dynamic economic areas.[2] Water availability and the river network have been historically important for the socioeconomic development of the PSRB and is intensively used by cities, industries, agriculture and electricity generation. Because of its strategic location (between the states of São Paulo, Minas Gerais and Rio de Janeiro), the catchment is today responsible for around 11% of the national GDP and it has been a key economic region for more than 300 years. Already in the 18th Century, the Paraíba do Sul was the main communication route between the coast (Rio de Janeiro) and gold mines in Minas Gerais. With the introduction of coffee production in 1770, vast areas of land were cleared and the natural catchment vegetation removed to open space for plantation farms. By the end of the 19th Century, because of the significant rates of soil erosion and land degradation, coffee production started to migrate to other parts of Brazil. Nonetheless, a new and stronger economic phase commenced around 1900s with the introduction of textile and food industries in the catchment. The proximity to the main consuming centres (Rio de Janeiro and São Paulo), facilitated the rapid development of industrial activity (Müller 1969). The most significant milestone was the foundation of the National Steel Company (CSN) in 1941, the fist major steel plant of Brazil. The catchment currently has a diversified industrial sector, which includes more than 6,000 manufacturing units. Together with fast industrialisation, there was a deliberate construction of hydroelectricity dams (starting with the Fontes Velha power plant in 1908), which resulted in more than 120 hydropower stations in operating in the catchment.

[2] The catchment includes 55,500 km^2 between latitudes 20°26' and 23°00'. The average flow at the river mouth is 1,118.40 cumecs, with low flow (Q_{95}) of 353.77 cumecs. The river extension is around 1,100 km, draining areas of 180 municipalities. More than 5.4 million people live in the catchment (Coppetec 2006).

Urbanization and industrial production have led to significant pollution problems due to organic material (1,000 megalitres/day of raw sewage) and industrial waste (7 tons/day).[3] According to the official environmental monitoring, the more polluted river stretches have rates of coliform bacteria between 50 and 160 times the legal threshold; water pollution is aggravated by the fact that only 17.6% of the catchment sewage receives some form of treatment. Treacherous biological conditions are particularly evident in the middle section of the main river where most of industry and hydroelectricity are located (Araujo et al. 2003). The indiscriminate industrial expansion left a legacy of river sediments seriously contaminated by heavy metals, such as chromium. In addition, the total rate of water demand amounts to 263 cumecs, which represents significant pressures on the available water resources (more than 74% of the low flows - see reference to Q_{95} above). The extraction of sand for civil engineering increased 193% (between 1993 and 2003) spreading to 256 sites, primarily in the upper catchment, where the evaporation of water alone is equivalent to a demand of 326,000 inhabitants (Dos Reis et al. 2006).

THE LIMITS OF IWRM REGULATION

As mentioned above, during most of the 20th Century water management in the PSRB meant the expansion of water supply and hydropower generation. The decision on where and how to invest was highly technocratic and centralised on the hands of the central government. At the same time that water supply and hydropower infrastructure expanded, there was minimal investment in effluent treatment and environmental restoration. In a few decades, the quality of the environment in the mains river and in many of its tributaries was seriously compromised. The official response to mounting water problems started in 1968, when the Paraíba do Sul Valley Commission (COVAP) was established by the military dictatorship in charge of country. The commission was practically ineffective and was replaced in 1979 by a multiministerial committee (CEEIVAP), also with negligible results. The membership in both organisations was restricted to public agencies and civil servants, without any political mandate from water users and other stakeholders. The PSRB became notorious as an area with serious water quality and quantity problems, while national

[3] It is beyond the objectives of this paper to describe the full range of environmental problems in the Paraíba do Sul, but detailed assessment and analysis are available in Coppetec (2002 and 2006).

and state administrations were doing close to nothing to revert the situation. It was only in the 1990s, when the level of pollution started to attract growing international criticism, that a more effective catchment entity was eventually established. As demanded by the 1997 Water Act, the new river basin committee (CEIVAP) was organised under the IWRM principles of catchment integration and stakeholder involvement. The PSRB quickly became a showcase for the national government, which supported CEIVAP to organise the headquarter bureaucracy and prepare studies and plans (Braga et al. 2005).

Notwithstanding governmental approval, environmental degradation and management fragmentation remain virtually the same in Paraíba do Sul since CEIVAP was formed. In fact, various CEIVAP members contacted during our research expressed their concern or even perplexity with the tinny environmental results achieved so far.[4] To be sure, most interviewees still believe that the current troubles are transitory and, in the long run, the committee would justify its existence. According to these opinions, the complexity of the catchment was underestimated when CEIVAP was formed, in particular the difficulty to integrate federal and (in the main river and in some major tributaries) state regulation (in most tributaries).[5] This dual domain - federal and state responsibilities - has been one of the major integration challenges for the management of larger catchments in Brazil. For instance, in the PSRB, 13 tributaries or sub-sections of the PSRB have their own consortium of municipalities trying to coordinate efforts, but not necessarily communicating to each other or with the overall catchment committee (i.e. CEIVAP). It is a bitter irony that the same reforms that aimed to advance integrated water management ended up forging an extensive fragmentation by tributary and sub-catchment. These contradictory results, namely the persistent environmental degradation and management fragmentation, appear to indicate some more fundamental inadequacies of the IWRM-inspired regulation.

The PSRB experience vividly reveals the epistemological, operational and political limitations of IWRM mentioned above. The new regulatory approaches have been presented to the general public as a significant step forward without any clear

[4] This research (between Mar-May, 2007) involved confidential interviews with catchment stakeholders and government officials, as well as content analysis of documentation, target contacts with policy-makers and attendance to public meetings.

[5] According to the 1988 Brazilian Constitution, water has dual ownership: federal, for those rivers that cross more than one state or are shared with other countries, and state responsibility, for those confined to one state territory.

indication on how long-lasting problems would be sorted out. There are very restricted resources to monitor water use and cope with environmental degradation in the catchment, which is only aggravated by the lack of coordination between federal, state and municipal authorities. The main obstacle to the achievement of IWRM objectives in the catchment, however, has been the verticalised and selective pattern of public participation. Despite a discourse of democratic decision-making, the new catchment committee has, for the most part, replicated the centralised, top-down mechanisms of water management. In order to understand the mismatch between theory and practice of IWRM, it is important to describe the recent history of the catchment committee. Our fieldwork quickly identified that in the last few years CEIVAP has had a busy agenda of meetings and ceremonies, many times involving ministers and senior authorities. Nonetheless, most of the catchment activities have focused on a single issue: the implementation of water use charges (i.e. bulk water charges). The case for water charges became stronger around the year 2000 when many committee members started to argue on the necessity to reduce the financial dependency from central government grants. Between 2000 and 2002, opinions against and in favour of charges split the committee into two polarised views. In favour of bulk water charges were the federal government, academics and some NGOs. Against the charges was basically the representation of agriculture, electricity generation and industry. During this time, according to the interviewees, CEIVAP meetings were turned into a battleground where the representatives of the production sectors systematically questioned the rationale of the proposed charges.

The fierce debate about the adoption of charges, instead of improving the quality of stakeholder engagement, was rather emasculating the initial enthusiasm about the new committee. Moreover, in 2002, the contention took a curious turn when the industrial sector 'surprisingly' changed their position and agreed with the proposed charging scheme. Apparently, the industrialists listened to the arguments and changed their opinion democratically. However, the real reason is rather more mundane: since the charges were inevitable due to growing pressure from the other CEIVAP members, the industry preferred to take a proactive action in order to secure reduced fees. The general public were led to believe that the industrial sector was cooperating with the new water management approaches, but it was a tacit acceptance of the charges in order to prevent further regulatory burdens. The irony was the unusual support that the industry received from the environmental NGOs, which

declined to impose higher charges alleging that that it was better to settle the matter at once. In effect, instead of a bottom-up decision-making, water policies were being manipulated by the stronger politico-economic players without any substantial interference from the other stakeholders. The main distortion created by the single agenda on charges was the neutralisation of public participation. The controversy about charges has, in effect, prevented the river committee to consider other environmental problems and social issues related to water, given that at the time of our fieldwork (in 2007) most of the debate in the catchment was still vividly about charges and exemptions.

Charging bulk water has been the central policy instrument of the new water regulation in the PSRB and constitutes a key element of the implementation of IWRM in the catchment. After a lengthy disagreement, the charging scheme was approved by the catchment committee in 2002 and the implementation started in 2003.[6] On paper, it was claimed that the charges, as an economic instrument applied to environmental policy, would be able to mitigate the environmental passive, induce rational use of water and reallocate water according to economic efficiency (Garrido 2004). In practice, however, it achieved little more than modest investments in isolated sewage works and riverbank regeneration projects. In 2006, a total sum of R$ 7.1 million (US$ 3.5 million) was spent in fourteen municipalities, but the money went to short-lived projects with minor environmental contribution. Because these grants from the committee come in the form of donations, competition for these modest resources is fierce. There is plenty of lobbying during the selection of proposals, which only helps to poison the dialogue between CEIVAP members and increases the suspicion of the general public about the real purposes of the whole regulatory system.

In any country, the implementation of bulk water charges is a complicated process that can easily become a huge controversy. However, the imperfections of the charging scheme adopted in the PSRB can only be elucidated by relating it with the long history of environmental degradation and the uneven balance of power that always characterised the catchment. The difficulty to translate charges into environmental restoration in the Paraíba do Sul was early recognised and related to the restricted payment capacity of most water users in relation to the scale of the

[6] All water uses above a certain threshold (i.e. consumptive use above 1 litre/second and hydropower bigger than 1 MW) must pay a monthly charge, calculated taking into account the extraction rate, the percentage of use and the quality of the effluent. There is a standard charge (R$ 0.02/m3) for industries, water supply and mining, and significant discounts for agriculture and aquaculture.

environmental degradation (Santos 2002). In effect, between 2003 and 2006, the charging scheme was responsible for collecting a total of R$ 25.4 million, which is considerably less than the estimated need to restore the catchment: R$ 360 million per year in capital investments or R$ 4,600 million by 2025 (Coppetec 2006). In addition, the acceptability of the charging scheme has not improved and, after more than five years of its introduction, there is still significant suspicion and misinformation in the catchment about the new water charging mechanism (data provided by the administration of the catchment committee show that the income remained fairly constant between 2003 and 2007). Among those supposed to pay for water use in 2004, more than 50% of water users refused or delayed their payment (Soares 2005). The industrial sector has had the most vacillating and opportunistic approach to accept water charges and an expressive minority still maintain their dissatisfaction with the new charges (Féres et al. 2005).

Probably the main failure of the PSRB charging mechanism is related to its economic efficiency. Until now water charges have neither influenced the reallocation of water in the catchment, nor curbed the expansion of water use. To some extent the new regulatory framework has induced some industries to anticipate investments in effluent treatment, but that only happened in the companies that were already planning to acquire new equipment or technology. In a survey with 488 industries in the catchment, Féres et al. (2005) found that most companies decided to invest in pollution reduction mainly because of the risk of bad publicity vis-à-vis their corporate responsibilities. That is consistent with other international studies which observed that the active engagement of the stakeholders, instead of charges, is the most important factor for achieving water efficiency and sustainable water use. By treating water users according to their payment capacity, the new water policy has eroded the differences between stakeholders and, consequently, has hidden differential responsibilities for environmental degradation. It means that the new regulatory framework legitimises the degrading activities of industrial and agribusiness companies, since bulk water charges provide a political excuse for not questioning their location, scale and operation. In the PSRB farmers and industrialists have politically used their payment for bulk water to justify demands for fiscal compensation and lenient enforcement of the environmental legislation. For all these reasons, it is difficult to agree with Formiga-Johnsson et al. (2007), when they claim that bulk water pricing is a success in the PSRB on grounds of inclusiveness and

technical efficiency. On the contrary, the opportunity to improve water management has been wasted under ideological pressures for the adoption of market-based policies.

The above description is obviously a simplified representation of a complex web of interaction and conflicts in the PSRB, although it serves as an illustration of the diversity of interests and the hierarchical distribution of decision power. This uneven political game certainly existed before the establishment of CEIVAP, but such asymmetries were only reinforced by the technocratic debate and turbulent struggle about bulk water charges. Instead of focusing on ecological goals, as proposed by the environmental economics theory, in practice the introduction of charges concentrated resources in the hands of the catchment bureaucracy, which is largely subordinated to the stronger players (ANA and agro-industry). The new water regulatory framework should be creating synergisms between State and society (cf. Lemos and Oliveira 2005), but the persistent focus on charges has widened the gap between water stakeholders. It confirms the observation that the ultimate goal of the regulatory reform in Brazil is really the implementation of water charging schemes (Brannstrom 2004). Charging for bulk water use is essentially a form of 'collective mirage' that is pervasive in publications and policies with minimal social and environmental contribution.

CONCLUSIONS

The recent attempts to improve water regulation in the PSRB represent only the most recent chapter in a long history of water use. After more than 300 years of intense agricultural, urban and industrial activity, the catchment remains in a seriously degraded condition. Effluent discharge, deforestation and river engineering have badly polluted the water and continue to compromise ecological stability. The new regulatory framework, mainly based on the introduction of a catchment committee and bulk water charges, was seen a decade ago as a response to the cumulative impacts of economic development. Notwithstanding rhetorical changes, the new approaches have largely reproduced the contradictions and limitations of the past history of water management. First, the new regulation has been unable to restore the environmental quality and prevent the continuation of degrading activities. Instead of minimising environmental pressures and mobilising the catchment population, most

of the regulatory effort has been concentrated on the introduction of water charges and on the establishment of a bureaucratic apparatus to manage the charging scheme. Second, the activities of the river basin committee have been dominated and manipulated by the stronger political players, namely the federal government and business sectors. Despite claims for integration, efforts in the PSRB are more fragmented than ever, given that there now exist 13 sub-catchment organisations in daily competition with the overall catchment committee (CEIVAP) for financial resources and political space.

The ambiguity of the PSRB experience demonstrates that IMWR-inspired answers, such as water charges, not necessarily lead to the best social and environmental solution. Despite the claim that water charges could offer a response to environmental degradation and foster economic efficiency, the legacy of social and political exclusion has largely deformed the new policy instrument. Instead of restoring the environmental condition, the new market-based policies introduced an economic rationality - the user-pays principle - that is blind to political asymmetries and environmental injustice. The epistemological, operational and political limitations of the IWRM theory are clearly present in the experience in the Paraíba do Sul River Basin. Despite calls for public involvement and decentralisation, the regulatory reforms have been manipulated by the central government and only the stronger political groups, industry in particular, have been able to influence the political landscape. Because of this subordination to broader, powerful interests, the ongoing IWRM-inspired reforms are unable address the historical responsibilities for water problems and fail to indicate a genuinely new direction for dealing with social demands and environmental conservation. As pointed out by Swatuk (2005), it is important to reflect on the political nature of the IWRM proposition and be prepared to revise, or even discard, the basic assumptions and ideologies driving the reform process.

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