

DECENTRALIZATION OF WATER RESOURCES MANAGEMENT IN SEMI-ARID REGIONS: the case of Jaguaribe River Basin, Ceará, Brazil.

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ABSTRACT --- Since the early 1990s, Brazil has been building a new water resource management system, with the river basin as the territorial unit for planning and management. One of the most advanced cases is occurring in the state of Ceará, in the semi-arid northeastern region. Among the poorest states of the country, characterized by a patriarchal political culture and extreme socio-economic inequalities, with a state government inexperienced in water management, Ceará would not have been a likely place to expect advances in promoting decentralized stakeholder models of water management. But, based on a more centralized model of water management than that proposed by the national water law, Ceará state has involved large numbers of stakeholders in key water management questions, implemented a bulk water pricing system, and created a state water management agency and decentralized institutions that are impressively strong, considering the context within which they grew. These changes have gone furthest in the Jaguaribe River Basin. This paper presents the major findings and conclusions of an analysis of institutions and policies in this basin that sought to evaluate the extent to which river basin management efforts have been successful and to identify the factors associated with both positive and negative outcomes.

Key-words: water resources management, decentralization, Jaguaribe River Basin.

1 - INTRODUÇÃO

With 80 municipalities and more than 2 million people, the Jaguaribe basin falls almost entirely within the semi-arid region known as the *sertão*, located entirely within the state of Ceará. Without regulation, all of the basin's rivers would flow only during the rainy season. The state's — and previously the federal government's — main policy strategy has therefore been to store water resources in reservoirs for the dry season or drought years. 75% of this water availability is provided by 3 reservoirs which have transformed about 470 kilometers of rivers in the middle and lower part of the basin into perennial waterways, changing the economic and political profile of the region. The basin is also the main water source for Ceará's capital, Fortaleza, and its metropolitan area, the state's largest urban and industrial area, which, importantly, lies outside the basin.

This paper presents the major findings and conclusions of an analysis of institutions and policies in this basin, which was part of an international study of experiences in decentralizing integrated water management to the lowest appropriate level (Formiga-Johnsson and Kemper, 2005 and 2007). It seeks to evaluate the extent to which river basin management efforts in Ceará and in

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the Jaguaribe basin have been successful and to identify the factors associated with both positive and negative outcomes⁵.

2. ANALYTICAL FRAMEWORK

The literature on water or other natural resource management and decentralization identifies a series of political and institutional factors associated with the emergence and sustainability of stakeholder-based, decentralized arrangements (Kemper *et al.* 2001 and 2007, based on: Ostrom 1990, 1992; Agrawal 2002; Alaerts 1999; Bromley 1989; Easter and Hearne 1993; Wunsch 1991):

i) Contextual factors and initial conditions. Successful decentralization is at least partly associated with the social context at the time a decentralization initiative is attempted, for instance, the level of economic development in the nation and of the river basin, the distribution of resources among basin stakeholders, and the social and cultural distinctions among stakeholders.

ii) Characteristics of the decentralization process. Two necessary conditions of a decentralization initiative are devolution of authority and responsibility from the center, and acceptance of that authority and responsibility by local entities in the basin. Whether both occur will depend in part upon why and how the decentralization takes place: top down, bottom-up, or mutually desired devolution; incorporation or involvement of existing local government governance arrangements; and consistent central government policy commitment.

iii) Central-local relationships and capacities. Because successful decentralization requires complementary actions, other aspects of the central-local relationship and their respective capacities can be expected to condition that success. These include: the extent of actual devolution; financial resources and autonomy at the basin level; basin-level authority to create and modify institutional arrangements; local experience with self-governance and service provision; distribution of national-state level political influence among stakeholders; characteristics of the water rights system; adequate time for implementation and adaptation.

iv) Basin-level institutional arrangements. Successful implementation of decentralized water resource management will also depend on features of the basin-level arrangements, such as: presence of basin-level governance institutions; clarity of institutional boundaries and match to basin boundaries; recognition of subbasin communities of interest; availability of forums for information sharing and communication and for conflict resolution.

3. PRINCIPAL FINDINGS AND CONCLUSIONS

The case study of the Jaguaribe River Basin is a fascinating example of integrated water resources management at the lowest appropriate level. In the first place, it suggests that even when

⁵ All papers of the larger study, supported by the World Bank, are available at www.worldbank.org/riverbasinmanagement

pre-existing conditions are almost entirely unfavorable, changes leading to more integrated and decentralized practices are possible. The analytical framework developed for the larger World Bank research project would suggest that the political and institutional situation of Ceará and the Jaguaribe basin was largely adverse to the increase of stakeholder involvement and transparency in decision-making. But when the decentralization model was tailored to these conditions, it was possible to begin to overcome them.

A second issue that this paper has brought up has to do with how change occurs. What happened in the 1990s that made it possible to transform practices that had been operating for decades? Water scarcity and conditions of almost permanent rationing certainly were motivations for change. But these conditions existed before. Perhaps more important were the national post-dictatorship context—highly favorable to democratization and decentralization—and the fact that a reform movement within the water resources sector began to promote integrated, participatory and economically sustainable management throughout the country in the 1980s. Both of these conditions, however, could describe all Brazilian states, most of which did not make the advances in decentralized water management that we have described in Brazil. Certain conditions specific to the Ceará context facilitated the adoption of the reform proposals in that state. A combination of an innovative state government, with an entrepreneurial orientation, and strong long-term support from the World Bank for reform in the water sector were critical for putting water security and management made on the top of that state's political agenda.

The high incidence of poverty in Ceará, its regional disparities, the limited capacity of user sectors to pay for water and the high cost of bulk water supply have, however, meant that Ceará's law does not entirely correspond to the decentralization model that was later developed in the federal legislation and most state laws. That model is centered around the creation of river basin committees and basin agencies with financial sustainability guaranteed through bulk water pricing. But in the Jaguaribe river basin – and in Ceará as a whole– the state government began to play a much more proactive role in water resources management, primarily through COGERH. In a sense, the adaptation made in the Ceará case was simply less decentralization from the state to local levels than the national model and even the state's own water law proposed. The presence of large hydraulic works throughout the state, which must be operated in close coordination if recurrent droughts are to be dealt with effectively, justifies this more centralized system. Moreover, the fact that the metropolitan area is dependent on the Jaguaribe basin, and will become even more so in the future, means that few at state level defend full decentralization. Water from the Jaguaribe basin is diverted not only to protect the city from domestic supply crises but also to guarantee steady economic growth. State politicians thus fear that if water allocation were fully the responsibility of each river basin body, the largest city in the state would risk losing access to the water from other

basins that is essential for its dynamism. At the same time, what is particularly interesting about this approach is that water management is more centralized in Ceará than elsewhere, local mobilization and stakeholder involvement is also more intense than anywhere else in Brazil.

A third conclusion of this paper is that the “lowest appropriate level” for decentralization in semi-arid regions is not always the river basin. As fora for negotiated allocation and conflict resolution, the user commissions for reservoirs and regulated river valleys serve as strong building blocks for integrated management. The sub-basin committees are still trying to define their roles and powers. Their creation, however, is a consensus at local level and they have increasingly mobilized local actors around water issues. The essence of Ceará’s experience in the Jaguaribe River Basin may thus be that the river basin scale is less relevant there for integrated water management purposes, in favor of combining state level management with decision-making at smaller territorial levels than the river basin, such as sub-basins, regulated river valleys, and reservoirs. This suggests that, although the principle of the river basin as a unit for decentralized management should be kept as a target, it must be tailored to each political and cultural context.

Finally, it should be stressed that much remains to be done, especially with respect to building a more holistic management system that incorporates efforts to promote better water quality and to coordinate water and environmental management. Nonetheless, the achievements made thus far are remarkable when compared to the problems and practices that seemed, until recently, impossible to overcome. Water rationing in the Jaguaribe Basin used to be an almost permanent state of affairs. Traditional institutions used to privilege the interests of entrenched oligarchies. Civil society and small users were excluded from water related decision-making. Water was, in general, managed and protected in only the most precarious and unsustainable of ways. All these unfavorable factors have been strongly challenged and will continue to challenge efforts to build a decentralized and integrated water resource management system in the Jaguaribe River Basin. The achievements already made are thus quite impressive.

BIBLIOGRAPHIE

FORMIGA-JOHNSSON, R.M.; KEMPER, K.E. (2005). *institutional and policy analysis of river basin management in the Jaguaribe River Basin, Ceará, Brazil*. Washington, DC: The World Bank: Policy Research Working Paper 3649.

FORMIGA-JOHNSSON, R. M.; KEMPER, K. E. (2007). "Brazil: Jaguaribe River Basin". In: Kemper K.E; Blomquist W; and Dinar A.. (Org.). *Integrated River Basin Management through Decentralization*. Berlin Heidelberg New York: Springer, p. 110-130.

GARJULLI, R.; OLIVEIRA, J.L.de; CUNHA, M.A.L. da; *et al.* (2002). *Projeto Marca d'Água: Relatório da Bacia do Rio Jaguaribe*. Fortaleza, Ceará, fevereiro. (www.marcadagua.org.br)

KEMPER K.E; BLOMQUIST W; DINAR A. (Ed.) (2007). *Integrated River Basin Management through Decentralization*. Berlin Heidelberg New York: Springer.

KEMPER, K.E.; DINAR, A.; BLOMQUIST, ; BHAT, A. (2001). *World Bank Group Research Project: Integrating River Basin Management and the Principle of Managing Water Resources at the Lowest Appropriate Level—When and Why Does It (Not) Work in Practice?* Research proposal. Washington, August.