

The Environmental Justice of Water (re)Distribution: An institutional analysis of the inter-basin transfer of the São Francisco River in Brazil

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Abstract

The project to divert part of the waters of the São Francisco River to the semi-arid region of Northeast Brazil is in progress since 2007. The alleged purpose of this 'megaproject' is to bring development to the Northeastern region and to democratise access to water in the '*semi-árido*'. While priority is supposed to be given to municipal uses, more than 90% of the total amount of water diverted will supply high yield export-oriented agricultural activities. The diversion will undoubtedly entail huge redistributive effects and there is uncertainty whether the project is truly aligned with the principles of environmental justice. In order to analyse the actual social and geographic distributive dimensions of the project, we propose an approach combining institutional and regulation based insights (following the precedent of the French *École de la Régulation*) with the concept of a 'hydrosocial contract'.

Keywords

Inter-basin transfers, São Francisco River, environmental justice, hydrosocial contract, political ecology, environmentalism of the poor, Brazilian economy, regulation school.

Introduction

The "Project of Integration of the São Francisco River with Hydrographic Northern *Nordeste* Basins" (*Projeto de Integração do Rio São Francisco com Bacias Hidrográficas do Nordeste Setentrional*, hereafter *Transposição do rio São Francisco*, TSF) has a long life of heated debate in Brazilian society. It was finally adopted in the wake of the first election of Lula, the works began in 2007 and the first part is to be completed by 2012.

The conflict around the transfer has concerned a very wide array of stakeholders, and probably every Brazilian has an opinion on the subject. The final victory of the proponents of such a 'megaproject' may be seen as a mere exemplification of the power of big capital-related interests over local communities and the environment, and a case of 'accumulation by dispossession' (Harvey, 2003). The resistance against the project, led mainly by grassroots social and environmental movements, might be viewed as a manifestation of the 'environmentalism of the poor' (Martínez-Alier, 2003).

Though such approaches are clearly relevant, other dimensions should be considered in order to sketch the political ecology-and-economy of the project, which is particularly complex. An institutional inquiry trying to articulate macroeconomic trends and governance evolutions seems necessary in order to understand the distributional dimensions of the project.

The social metabolism (Martínez-Alier, 2009) of Brazil is growing at a very fast pace since almost a decade and that of its North-Eastern region is growing as well, as its economic place in Brazil is being redefined. The economic conditions foster a redistribution of sustainability (O'Connor, 2002) of which new water use patterns are an integral part. The project of TSF shuffles the economic, social and environmental cards in the Northeast region, which explains why it gave birth to a wide array of conflicting discourses. Water transfers are intended to bridge water availability gaps, to fulfil a role of equating regional disparities. Thus, they are backed by an environmental and social justice rationale. But in the case of the São Francisco river, the alleged purpose of the project was not sufficiently documented by its promoters, and it is probable that it will deepen social inequalities.

We use an extensive literature review of first and second hand documents on the project (and to a lesser extent on similar large-scale water transfer cases) to analyse the distribution issues of the project. We confront varied institutional insights to characterise such a project in the Brazilian context. It is showed that the TSF will probably not enhance environmental justice in North-Eastern Brazil and in Brazil either, since the key issue of who benefits from the 'new' water was not adequately dealt with during the conception and construction phases.

In the second section, we present the recent development dynamics in Brazil, highlighting its growing metabolism and the resurgence of an export-led growth framework. Then we retreat recent advances and shortcomings in water resources management. We show that the institutional turn towards integrated water resources management has not yet received enough momentum to counterbalance traditional large-scale technocratic projects. Some key distributive issues are discussed in the last section. We argue that a critical aspect of the project is the lack of identification of the beneficiaries, which is a centrepiece of the current unsustainable hydrosocial contract.

2. The Brazilian Economy in the Early 2000s: Fast-Growing and Resource-Greedy

Brazil is currently considered as one of the most economically successful countries of the 'BRICS' (Brazil, Russia, India, China, and South-Africa) group. Its global economic and geopolitical place is becoming one of dominance. Still a regional power, it could well turn a global one within a decade.

Brazilian growth rates in recent years have been dramatic. Growth rates are particularly expressive since 2004, which corresponds to the beginning of Lula's first presidency. GDP increased 7.5 percent in 2010, a record high since 1986. It is no surprise that resource use is growing steadily as the corollary of a highly resource-intensive growth pattern. As a result, (clean) water is turning to be a limiting factor in some regions, in particular the semi-arid North-Eastern region (known as '*o semi-árido*').

Most recent tendencies of the accumulation process show a general trend of reprimarisation. During the last decade, while production increased by 32.3%, agribusiness (agriculture and livestock farming) grew by 47%. This is a noticeable turn in the sectoral pattern of growth. The economic history of Brazil is marked by economic cycles linked to commodity exports (coffee, gold, rubber...). As an alternative to such an unstable pattern of development, the strategy of "import substitution industrialization" was advocated from the 1930s on, and 'developmentalist' policies were launched under Getúlio Vargas' presidency. After World War II, the predominance of the "dependency theory", advocated by ECLAC (Economic Commission for Latin America and the Caribbean, CEPAL in Spanish) economists, supported a move away from commodity-exporting growth. Indeed, Brazil was quite successful in developing industrial sectors, but after a 'lost' decade (the 1980's) and a decade of monetary stabilisation considered also as a liberal period (the 1990's, under Fernando Henrique Cardoso, a former 'dependantist' sociologist...), Brazil is heading again for a predominantly primary-based economy, much as the rest of Latin America (Caldentey and Vernengo, 2010).

Exports of primary products as percentage of total exports increased from 42% in 2000 to 60,9% in 2009 (CEPAL, 2010). As a result, terms of trade are decreasing since 2003 (UN COMTRADE, 2009). Pulled by the recent surge in agricultural commodities prices, the agribusiness system is becoming ever more crucial in the Brazilian development dynamics. Since the beginning of the years 2000, Brazilian agricultural exports skyrocketed.

Considering not only exports, but the overall economy, some evoke a 'reprimarisation' process (AFD 2011), which is manifest while decomposing the trade balance (AEB, 2011). The recent public plan to give a further impulse to agrofuels (50 billion US\$ in 10 years) is just another evidence of this current trend. It goes without saying that such a reprimarisation process hinders efforts to redistribute land. The last IBGE census (2006) reports a Gini coefficient of land concentration of 0,872, as compared with 0,856 in 1995-1996.

It is not altogether surprising, therefore, that water use is growing fast, since Brazil enjoys the availability of huge amounts of fresh water. One may reasonably hypothesize that Brazil exports increasing quantities of virtual water. Brazil is actually a net exporter of water. While the agricultural sector is the principal user of water, it is increasingly directing its production to the supply of external markets. And agriculture is also the sector with the highest absolute increase in the total volume of water consumed (Carmo et al., 2008).

The Brazilian Northeast region (*Nordeste*) is undergoing important mutations in its development pattern as well. To put it simply, the region increasingly feeds the world while unable to feed the local population. Agricultural production in the Northeast is not locally oriented any longer, even if little peasant cultures remain through the subsistence production of poor households. The new development scheme in the Northeast is made of tourism and agribusiness. But Northeast is still on top of the food insecurity ranking : it touches 53,6% of the population. 19,5% of the population is subject to slight malnutrition, 21,6% moderate and 12,4% severe (Dantas 2008).

The production of noble grains (especially soy beans) and fruits is steadily growing, reinforcing the region's specialization in global market-oriented products. According to CONAB (*Companhia nacional de abastecimento*), soy bean production is growing, contrary to traditional crops which are diminishing (rice, corn, bean...), dramatically for some of them.

The tendency for fruits production is similar to that of soy beans, and is even more dynamic due to the great global demand. New fruits are included in the production matrix at a very fast pace.

At the same time, high value-added activities like shrimp farming develop in accordance with soaring

global demand. So, agribusiness and the types of agricultural products that are grown in the North-Eastern region require great volumes of water, and irrigated agriculture is bound to widely expand. But while public subsidies to irrigated agriculture are high (Banco Mundial, 2004), public projects are disappearing and private irrigation is stimulated. The control of irrigated agriculture in the Northeast is therefore increasingly in private hands.

3. The Water Sector Reform: Mid-Way to Democracy

The Brazilian water sector has undergone important evolutions since the end of the 1980s. As the 1988 Constitution introduced decentralization, the Brazilian legal water management framework introduced 'subsidiarity' as a key principle in water resources management in a federal context. All the problems that can be solved at a local scale have to be locally dealt with. So, it was not until 1988 that a system for water resources management was first created.

In 1997, after six years of negotiations, the Congress adopted a national water law (*Lei Federal 9433*) that incorporates modern management instruments and principles (demand policies, cost recovery, basin-scale management...). Legally, the way is open to Integrated Water Resources Management (IWRM).

Following the French example, Water Agencies (*Agência da Água*) and Basin Committees (*Comitê de Bacia Hidrográfica, CBH*) were created. While Basin Committees have a power limited to making recommendations, the executive bodies are the Water Agencies. In 2000, the Federal Law 9984 created the National Water Agency (*Agência Nacional das Águas, ANA*)

Representation in CBHs is paritary: an equal weight is granted to municipalities (*municípios*), the State (the Federal State if the river is federal) and civil society. This is not the case in other water-related institutions. Indeed, a key limitation of the democratic turn in water resources management is the composition of the National Council for Water Resources (*Conselho Nacional de Recursos Hídricos*), the executive body in charge of national water policies. A majority of 29 out of the 57 members of the Council are representatives of federal ministries. Deliberations made by the Council are binding, whereas river basin Committees, which are more democratically formed, have only an advisory function.

The technical personnel who promoted the new system tried to insulate it from politics, hoping to establish a 'depoliticised' participatory river-basin governance (Abers and Keck, 2006). But this ideal speech situation was hardly achieved in any river-basin committee. Most of them are still in a construction phase, while many are still to be created. Moreover, the Brazilian case shows that even though water resources management is theoretically decentralised and participatory, it is very difficult to get rid of the inheritance of a paternalistic state that maintains close links with dominant groups and local elites (Fracalanza and Campos, 2010).

Following the seminal work of Turton (1999), the Hidro Social Contract Theory (HSCT) discusses the relationships between the State, society and resources. Allan (2005) distinguishes five water management paradigms that are deemed to occur more or less chronologically : a premodern period, then the industrial modernity (characterised by an hydraulic mission), and reflexive modernity (successively green, economic, and finally political-institutional). So, in terms of hydropolitics Brazil seems to be hesitating between the industrial modernity and some kind of reflexive modernity. According to Granja and Warner (2006), water resources management in Brazil is in a transition phase between two paradigms but still characterized by the "hydraulic mission" of the State, with big hydraulic projects initiated in a top-down technocratic fashion.

In addition, as pointed out by the World Bank (Banco Mundial, 2003), while in the water sector excessive emphasis is put on expansive investments, very little attention is paid to administration, management and maintenance of existing infrastructure.

4. Key Elements on The Water Issue in the Northeast Semi-Arid Region

The semi-arid region of Brazil (*o semi-árido*) covers 57% of the total area of the Northeast, and approximately 40% of the population. Average annual rainfall is under 800 millimetres, evaporation and evapotranspiration rates are very high as well as rainfall variability, and extreme meteorological events are frequent (Castro, 2011).

Water use and management in the semi-arid region of Brazil is traditionally characterized by privatisation, centralised decision-making, paternalism in drought periods, and a lack of enthusiasm and participation of users (Pinheiro and Carvalho 2010). The region is characterised by a historical concentration of water resources through the construction of great reservoirs on private properties, allowing powerful local elites to keep control over water. Thus, private property of water has long been intimately linked with property of land.

Although during the 20th century several institutions specifically dedicated to the development of the Northeast were created, like the DNOCS (*Departamento Nacional de Obras Contra a Seca*) in 1919, CODEVASF (*Companhia de Desenvolvimento dos Vales do São Francisco e do Parnaíba*) in 1948 and

SUDENE (*Superintendência do Desenvolvimento do Nordeste*) in 1959, water scarcity remains widespread.

But the region is not technically water-scarce, since a great number of reservoirs (called *açudes*) built by the DNOCS in the second half of the 20th century contribute to make the Brazilian *semi-árido* the water-richest semi-arid region in the world. Actually, the problem of water scarcity is first and foremost one of power structure and bad management. An expressive number of publicly funded reservoirs (*açudes*) were built on private properties and many of them, on unproductive lands, are unemployed.

Huge volumes of water have been accumulated in large *açudes* but the distribution of this water to dispersed households and family farms scattered in the *semi-árido* is lacking. As consequence, very few family farms have access to irrigation. Moreover, many poor people living close to a reservoir have no access to it. That is why many argue that the problem of water scarcity is predominantly a problem of agrarian structure (see Ioris, 2007, 2010).

In the *semi-árido*, traditionally, rural oligarchies keep control over official institutions responsible for the implementation of public policies against drought. The link between private property of land and property of water is very tight.

For many decades, local power relationships were reinforced by the formation of a deterministic rationale directly relating drought to underdevelopment. (Winter Ribeiro 1999). As demonstrated by Castro (1992), the permanency of such a discourse is linked to regional elite strategies for attracting federal subsidies.

Local elites have thus an interest in the status quo and they manipulate scarcity (through a discourse over-emphasising the *fatum* of water scarcity) so as to maintain the grip on the social structure. There has emerged a so-called *indústria da seca* ("drought industry", or "scarcity industry"). Mehta (2007) describes a similar phenomenon in western India with the example of the controversial Sardar Sarovar Narmada Project (SSP). Scarcity narratives, naturalising the lack of water, obscure the fact that access to water resources is highly unequal and that it is, to a large extent, a social construct.

5. An Old Cornucopian Dream Turned a Centrepiece of the Brazilian Development Strategy?

The São Francisco river, the "River of Integration" (*Rio da Integração*), is 2830 km long, the longest river fully inside Brazil.

It is considered as an endangered river since it was extensively dammed during the second half of the 20th century, and it is polluted by agricultural and urban/industrial effluents.

15,5 million people live in the basin of the São Francisco, in some 450 *municípios*. Almost 56% of these *municípios* have more than 40% of their households under the extreme poverty line.

There are less than 400 thousand hectares irrigated in the basin, which corresponds to less than a half of the estimated potential. Such figures exemplify the fact that the presence of water is not sufficient to bring development. While proponents of the TSF argue, in a rather deterministic way, that channelling water to the North will lead to development, a huge amount of riparian households of the São Francisco have no clean drinking water and no irrigation water either.

The idea of diverting the water of the São Francisco is far from being new. The project was first proposed after the great drought of 1875. During more than one century, it was recurrently modified and debated, but technical difficulties were too high and there was a lack of energy sources to pump water and drive it beyond the hills on the Northern axis. However, the idea was never fully abandoned, and the technocracy and scientific elite have long envisioned it as a (sparkling) challenge to be faced up to.

Indeed, the project is extremely ambitious: it is intended to provide drinking water for 12 million families (43 million people) in the poorest and driest region of the Northeast. Grassroots movements opposed to the project claim it will attend only 3 million people, of which 2,2 million in the Metropolitan Region of Fortaleza (capital city of Ceará state).

The project was lastly postponed in 2001 after manifestations of hostility during public hearings in the donor regions. The rejection of the project became reinforced by the fear of an energetic crisis from April 2001 on, a problem the diversion of the São Francisco would be bound to aggravate if implemented. After several hunger strikes by the now famous bishop of Barra (Bahia) Luís Flávio Cappio, the government decided to start the works in 2007.

The project is part and parcel of the PAC (*Programa de Aceleração do Crescimento*, Growth Acceleration Program), being the most expensive of the projects. It may also be considered as partaking of the larger IIRSA project (*Iniciativa para la Integración de la Infraestructura Regional Suramericana*, Initiative for the Integration of the South American Regional Infrastructure). By the way, PAC is considered by many as a national complement to IIRSA. Great works officially outside IIRSA would be intimately linked with it, like the TSF, and the two axes would have been chosen so as to create conditions for agribusiness to thrive in the region.

6. The Importance of Distributive Issues

Is there a link between the scale of the project and its foreseeable distributive effects? How was the distributive dimension handled in the conception of the project? Though answering such questions is not straightforward, the examination of alternatives to the TSF provides some insights.

First of all, it is worth reminding that existing studies do not identify beneficiaries of the projects of irrigation allowed by the transfer, which raises critical questions about the social distribution of benefits. The transfer is considered as a way of correcting a “geographical injustice” (see Clarimont 2010) and to put an end to a secular natural problem of water scarcity in a damned region, but its 'social justice' component remains unclear. The spatial dimension came to blur the social issue. A ready-made criticism addressed to the critics of the project is that their viewpoint is biased by their spatial location. Indeed, the governor of Bahia state (one of the donor states) was the most virulent opponents of the project. Such a downplay of the social justice issue may be viewed as the most critical flaw of the project. The importance of taking into account the distributive dimension is clearly stated by Molle (2005) :

“The possibility for some actors to impose or shift these externalities to other parts of the basin, or to other basins, is the expression of a power structure which must be made explicit. Rivers basins thus appear as wider arenas where complex interactions between societies and the environment take place and where the definition of a regulation regime—the sanctioned or challenged pattern of access and control over water resources—takes center stage.”

Clearly, the power structure involved in the TSF project was not made explicit, and some actors are still wondering what is its real purpose and what are the interests to be served.

Interestingly, pro-TSF narratives put a 'geographical justice principle' to the forth, which blurs and minimizes social justice concerns. The semi-arid region of the Northeast is known to be 'castigated' by nature, and the kind of related discourse is one of fatality. Social justice *per se* is actually part of the arguments put forward by TSF proponents. The poorest of the poor in the *sertão* would be waiting for the project for decades, and it would be their last chance. Thus, while grassroots movements of the São Francisco basin were voicing concern about the project, led by the bishop Luis Flavio Cappio, the president Lula da Silva said: “between the bishop and the poor, I prefer the poor”. It became thus morally unacceptable to hinder the realisation of the project.

But the crucial question “who will benefit from the transfer?”, repeatedly asked by the famous Brazilian geographer Aziz Ab'Saber, was never really addressed by official agencies. Thomaz da Mata Machado, president of the São Francisco River Basin Committee, contends that the project will not solve the problem of drought in the Northeast, as stated by former President Lula. On the contrary, it “*concentrates water where it is already present*”, in the Castanhão reservoir, in Ceará state, where 85% of transferred water will arrive. “*The problem will not be solved by concentrating water, but by distributing it. The project does not bring water to scattered population and neither to small towns. The transfer is a project by the elite from Ceará for economic development*”. (*Folha de Sao Paulo*, December 15th, 2007). The project “*aims at using public funds to favor contracted firms and agribusiness, to privatise and concentrate waters of the Northeast in some hands – always the same –*”. Such a point of view is in line with that of the agronomist João Suassuna who, for fifteen years, never ceased to argue that “the *Nordeste* does have water, but it lacks distribution”.

As suggested by Molle (2005), capital ‘attracts’ water. While promoting such an 'attraction', the transfer is bound to frame a new 'water regime' (Molle, 2005) in the Northeast, as well as a whole socio-spatial restructuring. Once big hydraulic infrastructures are created, private capital is attracted, then water demand rises, more infrastructures are needed and so on (Lins, 2011).

Through the TSF, water is becoming both more urbanized (Swyngedouw 2004), and more 'commodified' through export-led agriculture and the introduction of water charges (Ioris, 2007, 2010). Among receiving states, Ceará developed very rapidly its hydraulic resources since the 1980s, with ambitious development programs. The pattern of growth is clearly export-oriented. The concept of *agro-hidronegócio* (literally, 'agro-hydro-business'), proposed recently by Antonio Thomaz Junior, reveals thus useful to characterise the current dynamics in the Northeast region of Brazil.

It is worthwhile noting that opposition against the project was predominantly grassroots. Then, the kind of narrative embraced by the movements opposing the TSF is one of mixed social and environmental arguments. The TSF would impact riparian people downstream through a decrease in water flow, reduction of fishing opportunities. They also fear that the huge amounts of money involved in the project might have crowding out effects on other local-scale or conservation-revitalization projects. As argued by Linton (2010), modern water has lost its territoriality. It is striking to see how this is opposed to the kinds of grassroots claims made since the conflict around the TSF is on stage. The following insight applies quite well to our

case: “Stakeholders and participants are thereby consulted but not so as to elicit how different players may relate to water in ways other than as a resource whose natural disposition is to be managed.” (Linton 2010, p. 241).

The project has been opposed by a wealth of grassroots movements, of which a great number pertain to the Articulation of the Semi-Arid (*Articulação para o Semi-árido*, ASA), a forum of over 700 civil society organisations. Riparian indigenous peoples from Pernambuco, Sergipe, Alagoas and Bahia (mainly the Truká and Tumbalalá) have expressed their discontent and participated in the various mobilisations. The Brazilian Lawyers' Association (*Ordem dos Advogados do Brasil*, OAB) declared that the project was unconstitutional, and the OAB of Sergipe State mounted a legal action against the project. Up to now, more than 20 court cases were brought before the Federal Supreme Court (*Supremo Tribunal Federal*). Other technical or scientific bodies that criticised the project include the CONSEA (*Conselho Nacional de Segurança Alimentar*), a consultative board providing the President with guidance in the domain of food and nutrition policies, or the Brazilian Society of Limnology (*Sociedade Brasileira de Limnologia*) pointed out to technical shortcomings. Critical viewpoints were also released by the Brazilian Society for the Progress of Science (*Sociedade Brasileira para o Progresso da Ciência* – SBPC) and the Center of Studies and Projects for the Northeast (*Centro de Estudos e Projetos do Nordeste* – CEPEN). Even the World Bank expressed doubts about the usefulness of the project in terms of poverty reduction.

In terms of political process, the project was adopted in a hardly democratic way. Most significant was the disregard by the Lula government for the opinion expressed by the Basin Committee of the São Francisco River (*Comitê de Bacia Hidrográfica do São Francisco* (CBHSF)) and that of the National Environment Conference (*I Conferência Nacional do Meio Ambiente*).

7. Concluding remarks

As long as the federal state keeps a strong hold on key water issues and the development pattern of Brazil is characterised by a reprimarisation of its economic matrix, water resources management is bound to depart from the integrated resources management framework. As argued by Castro (2007), although 'water crisis' is now a key element of concern, governance is repeatedly put forward as a central issue, and integrated management has become commonplace, water is still widely considered as a mere 'resource'. Its economic dimension, as stated in the Dublin principles, has become paramount and other forms of valuation are hardly perceived, as exemplified by the case of the TSF.

While an instrumental understanding of governance as a strategy to achieve certain goals is still pervasive, some key questions remain. “How are these “societal goals” defined? Who defines these goals? Why a particular language of valuation, economic valuation, has been preferred over others? Who has the power to decide that this is the relevant language of valuation for water management issues” (Castro, 2007, p. 101). In the case of the TSF, integration of sound water management concerns was made in a rather cosmetic way, and the new hydrosocial contract being built in Northeastern Brazil is perhaps not exactly heading toward a 'rousseauist' one.

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