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Jessica Lee

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THE SÃO FRANCISCO RIVER TRANSPOSITION PROJECT: FRIEND OR FOE TO THE BRAZILIAN PEOPLE

*Jessica Lee**

IN the 1980s, Brazil's national government began developing designs for a project to redirect portions of the São Francisco River in the northeastern region of the nation.¹ This project, called the São Francisco River Transposition Project, is designed in its current manifestation to divert water from the São Francisco River into the northern and eastern portions of the nation, where water is scarce.² Typical of many large-scale Brazilian infrastructure projects, the transposition project has faced numerous hurdles on its way to implementation, including the refusal of the World Bank to provide financial support for the project.³ As recently as late July 2007, work on the fledgling project suffered another setback when the Supreme Court suspended the licensing process for groups working on the project due to irregularities.⁴ Because the area to which the government seeks to divert water is a growing location for agricultural exports, the resolution of the conflict over the project is highly likely to impact the global economy.⁵ But the question remains as to what the ultimate cost—though not in dollars—will be to the peoples and environment of what is the poorest region of Brazil.⁶

* Jessica Lee is a third year student at Southern Methodist University's Dedman School of Law and is the Managing Editor of THE INTERNATIONAL LAWYER.

1. Karin Kemper et al., *São Francisco River Inter-Basin Transfer Project Brazil*, World Bank Water Forum, May 2002, at slide 8, [http://lnweb18.worldbank.org/ESSD/ardext.nsf/18ByDocName/S%C3%A3oFranciscoRiverInterBasinTransferProjectBrazil1036KBs/\\$FILE/KEMPERSaoFranciscoRiverInterbasinProject.pdf](http://lnweb18.worldbank.org/ESSD/ardext.nsf/18ByDocName/S%C3%A3oFranciscoRiverInterBasinTransferProjectBrazil1036KBs/$FILE/KEMPERSaoFranciscoRiverInterbasinProject.pdf) [hereinafter Kemper].
2. *Surveying Work Kicks Off on Sao Francisco Transposition Project*, BUS. NEWS AMs., June 27, 2007, http://www.bnamericas.com/story.xsql?id_sector=4&id_noticia=397697&Tx_idioma=I&source=.
3. *Analysis: Mega-Projects and Mega-Blunders – The Sao Francisco River Transposition*, BUS. NEWS AMs., July 20, 2006, available at LEXIS-NEXIS Academic. [hereinafter *Analysis*].
4. *São Francisco Transposition Licensing Suspended*, BUS. NEWS AMs., July 27, 2007, available at LEXIS-NEXIS Academic.
5. *The Harnessing of Nature's Bounty – Brazilian Agriculture*, THE ECONOMIST, Nov. 5, 2005, available at LEXIS-NEXIS Academic [hereinafter *Harnessing*].
6. *Brazil River Dispute Highlights Larger Issue* (NPR radio broadcast Aug. 29, 2007) [hereinafter *Brazil*].

I. BRAZILIAN WATER LAW AND THE SÃO FRANCISCO RIVER TRANSPOSITION PROJECT

Historically, water in Brazil was designated as either public, common, or private, but the Federal Constitution of 1988 designated all water in Brazil as public property, with the major rivers belonging to the federal government, smaller surface and underground sources belonging to individual states, and the river basins belonging to both.⁷ This change is important in a world where concern over water availability is growing because the nation of Brazil is in a fortunate position. Brazil is in possession of the most abundant supply of freshwater, with between 8 and 11 percent of the entire world's freshwater reserves located within its boundaries.⁸ This vast reserve of water, approximately thirty-four million liters for every inhabitant of Brazil, is held within several large river basins and underground aquifers.⁹ Despite the abundance of freshwater in Brazil, not all regions are blessed with equal reserves, and the northeast is the only region without an "enviable abundance of water."¹⁰ The northeastern region of Brazil "has endured more than 70 droughts over the past 150 years," and the concern over the lack of water in that region is the main impetus behind the implementation of water plans.¹¹ Because the region is so drought-prone, the residents subsist on "less than a third of the United Nations' definition as the minimum amount to provide for human needs."¹² The lack of adequate and reliable water supplies has also contributed to the incredible poverty in the region.¹³

Enter the São Francisco River Transposition Project, an ambitious project undertaken by the São Francisco and Parnaíba Valleys Development Company (CODEVASF), a "joint venture between the Brazilian Government" and private investors.¹⁴ As approved by the Brazilian National Water Resources Council in 2005, the project involves the construction of

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7. Antonio Herman Benjamin, et. al, *The Water Giant Awakes: An Overview of Water Law in Brazil*, 83 Tex. L. Rev. 2185, 2196 (2005). The National Water Act of 1997, "the heart of federal legislation applicable to water" reinforces the designation of water as a public resource. *Id.* at 2199.
 8. *Id.* at 2185; see also Grace Fan, *Abundant Water Makes Brazil Last Agriculture Frontier, As Scarcity Looms In Rest of World*, ASSOC. PRESS FIN. WIRE, Aug. 24, 2006, available at LEXIS-NEXIS Academic (contending that 11% of the world's freshwater is in Brazil).
 9. Benjamin, *supra* note 7, at 2185.
 10. *Id.*
 11. *Analysis, supra* note 3.
 12. *Id.* The United Nations has set "the minimum amount [of water] to provide for human needs[] at 1,500 cu m per person per year," yet the people of northeastern Brazil are, on average, receiving only 450 cu m per person per year. *Id.*
 13. Kemper, *supra* note 1, at slide 4. According to the World Bank, more than half of the municipalities in the northeastern region have more than 40% of their families living "below [the] extreme poverty line." *Id.*
 14. U.S. Commercial Service, *CS Brazil Market Research: Transformation of São Francisco River*, (2005), http://buyusainfo.net/docs/x_44277730.pdf [hereinafter *U.S. Commercial*].

two channels heading north and east from the São Francisco River.¹⁵ The overriding purpose of the project, as declared by the Brazilian National Integration Ministry, is to ensure that water reaches the drought-stricken people in this region of the country.¹⁶ While part of this water is certainly intended to benefit the rural poor, who make up 40 percent to more than half of the region's population, the government is also interested—some critics would argue more interested—in increasing urban growth and industrial and “high value” agricultural crop development through a steady supply of water.¹⁷

II. AGRICULTURAL INTEREST

In recent decades, Brazil has grown into an international “agricultural powerhouse.”¹⁸ Part of the meteoric rise in Brazilian exports is the vast amount of available farmland. According to Brazilian president Luiz Lula, only one fifth of Brazil's arable land is currently being cultivated, and farmers would not need to clear forests in order to utilize the estimated 320 million hectares of available land.¹⁹ In 2006, Brazil was the top world exporter of sugar, beef, and coffee, and other products, such as soybeans and biofuel crops, are quickly gaining ground.²⁰ The Brazilian orange juice industry, one half of the entire world output, is expected to continue to grow in coming years, and agribusiness is looking to the São Francisco area to expand its production by as much as 800,000 tons.²¹ Perhaps most important in today's tight oil market, forecasts predict that Brazil may grow to dominate the world's biofuel market as highly populated countries seek means to reduce their carbon emissions.²²

Another aspect of Brazil's successful agricultural ventures is that its climate is perfectly suited to farming; the northeastern São Francisco basin region has been compared to “an open-air greenhouse, with persistent

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15. *Council Approves São Francisco River, Basins Integration*, BUS. NEWS AMs., Jan. 25, 2005, available at LEXIS-NEXIS Academic. The Leste channel “will supply the states of Pernambuco and Paraíba” while the Celso Furtado channel “will supply Ceara, Paraíba and Rio Grande do Norte.” *Id.*
 16. *Analysis*, *supra* note 3. Remarkably, this diversion will only reduce the São Francisco River's output into the Atlantic Ocean by 1%. *Id.*
 17. Kemper, *supra* note 1, at slides 4, 6.
 18. David J. Lynch, *Brazil's Agricultural Exports Cast Long Shadow*, USA TODAY, Mar. 9, 2006, available at http://www.usatoday.com/money/world/2006-03-09-brazil-2-usat_x.htm.
 19. John Vidal, *Increased Emphasis on Biofuel Farming is a Recipe for Disaster*, THE GUARDIAN, Aug. 29, 2007, available at LEXIS-NEXIS Academic. This statement contradicts an earlier statement by the head of Embrapa, the main agricultural research institute, suggesting that only ninety million hectares of land were available outside of the rainforest. *Harnessing*, *supra* note 5.
 20. Lynch, *supra* note 18. The Brazilian government has publicly stated that it would like to plant an estimated 300 million acres of biofuel crops. *Vidal*, *supra* note 19.
 21. *Brazil Vale do São Francisco Able to Produce 200 Mln Boxes of Oranges Annually*, LATIN AM. NEWS DIG., Dec. 5, 2006, available at LEXIS-NEXIS Academic.
 22. David Luhnnow & Geraldo Samor, *As Brazil Fills Up On Ethanol, It Weans Off Energy Imports*, WALL ST. J., Jan. 9, 2006, A1, available at <http://yaleglobal.yale.edu/display.article?id=6817>.

sun, fertile soil and low humidity, a natural barrier to disease."²³ Early attempts at irrigation in the area have produced miraculous results in terms of the speed of growth, allowing more harvests per year in the area for certain crops than anywhere else in the world.²⁴ Brazil's water resources are also a key selling point for many agricultural investors. It is expected that within the next ten to twenty years many of the largest nations in the world will be suffering from water shortages and forced to rely more heavily on imports of agricultural products to feed their populations.²⁵ As noted *supra*, Brazil is home to the largest reserves of freshwater, and the Federal Government, by supporting water management programs, seeks to ensure that freshwater is available to farmers to meet this anticipated growth in demand.²⁶ The São Francisco transposition project alone is anticipated, through irrigation, "to increase production by 1,000,000 hectares of very fertile areas" in the northeastern portion of the country.²⁷

Despite Brazil's long-standing view of agricultural ventures as merely a means of securing food for the rural poor, Brazilian governments during the twentieth century invested heavily in innovations that promoted efficiency in farming. The government formed Embrapa, a state-funded research institute, in 1971 to promote inventive farming and to fund education for Brazilian farmers in both America and Europe.²⁸ The extra education and funding has allowed Brazil to develop its own farming technologies rather than rely on the inventions of other nations, and it has also yielded innovations in agricultural products, such as new breeds of soya that are better suited to Brazil's climate and bagasse, "the crushed dregs of sugar cane," that scientists hope will eventually be used for biodegradable plastic.²⁹ More important for the São Francisco river project, the government, in its bid for efficient farming, encouraged the consolidation of smaller farms into much larger ventures, and therefore most agricultural production in Brazil is consolidated in the hands of a few large agribusinesses, which is a stark difference from the organization of agriculture in other developing nations.³⁰

23. *Harnessing, supra* note 5.

24. *Id.* For example, grapes mature sixty days faster in northeastern Brazil than anywhere else. *Id.*

25. Fan, *supra* note 8. The International Food Policy Research Institute estimates that by 2020 China, India, and many North African and Middle Eastern nations will be importing more food products due to water shortages. *Id.*

26. *Id.*

27. U.S. Commercial, *supra* note 14.

28. Lynch, *supra* note 18: *see also Harnessing, supra* note 5 (noting that "farming provides the outstanding examples of Brazilians inventing technologies rather than importing them").

29. *Harnessing, supra* note 5.

30. Lynch, *supra* note 18.

III. CRITICISM OF THE SÃO FRANCISCO RIVER

As noted at the World Water Forum hosted by the World Bank in 2002, the debate surrounding the São Francisco River Transposition project has been incredibly divisive.³¹ One of most persistent claims is that the project will benefit only the wealthiest portions of the population.³² It has been suggested that the rural poor will only receive about 4 percent of the water to be diverted from the river.³³ The remaining 96 percent, critics say, will go to benefit the large construction companies, and more importantly, the large-scale farmers.³⁴ This allegation is unsurprising given that government-sponsored consolidation of farms has led nationwide to an excess of 2,500 to 12,500 acres in most farmsteads.³⁵ The growing international interest in ethanol, the sugar-based fuel, also heightens concerns about agricultural water use sapping the benefits from the river project. Brazil is seeking to more than double its ethanol exports by 2010, and as agricultural efforts shift to the northeastern portion of the country, it is likely that more of the water diverted from the São Francisco River will be used to irrigate those new ventures.³⁶ As late as August 2007, the federal agricultural research agency reported that near the city of Petrolina in Pernambuco “90 percent of the water from the [São Francisco] river goes to large-scale agriculture,” all of which is destined for export, and the residents often resort to climbing the thirty-foot irrigation canals to get clean water for themselves.³⁷ Although many factors, such as “foreign exchange, interest rates and economic growth,” will affect the growth rate of Brazilian agricultural development, it is unlikely that the government will deny agricultural businesses their desired waters; in 2005 “trade in agriculture and related industries [accounted] for 40% of Brazil’s exports and in 2004 for 100% of the \$34 billion trade surplus.”³⁸

Critic’s fears may be assuaged, though, by research and development in agricultural innovations. While it is true that “agriculture is the single largest user of the world’s water resources,” Brazilian researchers have

31. Kemper, *supra* note 1, at slide 12.

32. Steve Kingstone, *Brazil Bishop Protest Wins Delay*, BBC NEWS, Oct. 7, 2005, available at <http://news.bbc.co.uk/2/hi/americas/4317944.stm>.

33. Andrea Zellhuber, *São Francisco Diversion: Brazil Vows Water for All But Elite Will Get It*, BRAZZIL MAG., June 25, 2007, available at <http://www.waterconserve.org/shared/reader/welcome.aspx?linkid=78540&keybold=dam%20protest%20indigenous>.

34. Brazil, *supra* note 6.

35. Lynch, *supra* note 18.

36. Luhnaw, *supra* note 22. Brazil expects that its ethanol exports will grow to \$1.3 billion by 2010 in an effort to meet demands by Japan and Sweden. *Id.*

37. *River’s Bounty Bypasses Families, Feeds Business*, (NPR radio broadcast Aug. 29, 2007), available at <http://www.npr.org/templates/story/story.php?storyId=14033120> (last visited Dec. 25, 2008). One resident’s daughter died after falling from a canal, and the resident said that there was really no other solution for poor families seeking water. *Id.*

38. *Harnessing*, *supra* note 5.

worked to develop more water-efficient plants.³⁹ The sugar industry funded Brazilian research facility Centro de Tecnologia Canavieira in its work to decode sugar cane DNA, and that research helped to determine “which variety will grow best in which part of the country” and led to the development of “some 140 varieties of sugar.”⁴⁰ Even Embrapa, the state-sponsored research institute, is looking to combat water conflicts by developing genetically modified crops that use less water.⁴¹ Additionally, Romolo Macedo, the coordinator of the project, asserts that there is no problem with the agroindustries receiving a larger portion of the share of the water because the benefits to the industry will translate into benefits for the population of the region.⁴² Macedo maintains that the irrigation of 750,000 acres and the increased water to other industries will translate into one million jobs for the financially disadvantaged region.⁴³ In support of the federal government’s position, the Brazilian Supreme Court dismissed a lawsuit contending that the project violated the São Francisco hydrographic basin committee’s requirement that the water be used for human and animal consumption by using the water for agricultural purposes.⁴⁴

Critics of the projects raise another very significant concern: the impact that the construction will have upon the indigenous peoples in the north-eastern region. Brazil is home to several different indigenous peoples, and the proposed changes to the river are expected to severely impact their ways of life.⁴⁵ Both international treaties and the Brazilian Federal Constitution mandate that the government must consult with the tribes and obtain their permission before beginning projects that might affect their regions; however, critics contend that the tribes did not consent to the project.⁴⁶ According to Chief Nequinho Truká of the Truká tribe, the diversion of the river will destroy his tribe’s 500-year-old way of life be-

39. Fan, *supra* note 8 (observing that Brazilian researchers are working to develop drought-resistant plants); *see also* Luhnnow, *supra* note 22 (noting that decoding the sugar cane genome led to drought resistant sugar plants).

40. Luhnnow, *supra* note 22.

41. Fan, *supra* note 8.

42. *Brazil*, *supra* note 6.

43. *Id.*

44. *Analysis*, *supra* note 3; *see also* *Eleven Lawsuits Pending Against São Francisco River Transposition*, *BUS. NEWS AMS.*, May 14, 2007, available at LEXIS-NEXIS Academic [hereinafter *Eleven*] (noting that all of the lawsuits attempting to halt the project have been dismissed).

45. *Brazil: Evicted From Land Truká Indians Take Over New Area*, *BRAZIL MAG.*, Oct. 8, 2007, <http://www.brazilmag.com/content/view/8440/54/> [hereinafter *Evicted*].

46. *CNBB and Jose Alencar Will Ask Lula To Resume Dialogue On the Transposition of the São Francisco*, *BRAZ. JUST. NET*, Aug. 29, 2007, <http://www.braziljusticenet.org/575.html#CNBB>. The Indigenous and Tribal Peoples Convention of 1989, to which Brazil is a party, provides that indigenous peoples “shall participate in the formulation, implementation and evaluation of plans and programmes for national and regional development which may affect them directly. Indigenous and Tribal Peoples Convention, art. VII, ¶1, open for signature June 27, 1989, available at <http://www.ohchr.org/english/law/indigenous.htm>.

cause their culture is so intrinsically connected to the river.⁴⁷ A change in the river would dramatically and adversely affect the tribe because the tribe receives “force and guidance from the magic sources of light that live in the forest, the water, land and the air.”⁴⁸

Although the tribe’s concern does have a spiritual basis, much of its fear really stems from practical considerations regarding their livelihood. The Truká tribe feeds itself through subsistence farming, fishing, and hunting on its 14,000-acre island in the middle of the São Francisco River, and the tribe worries that changing the river course will damage its homeland, particularly as one of the two canals is only one half-mile away.⁴⁹ Court-ordered evictions have resulted as recently as July of 2007 in repossession of various areas in the northeastern regions by the Truká tribe.⁵⁰ The federal government has also failed to make provisions for compensating the indigenous peoples for use of their land.⁵¹ So far, concerns regarding the rights of the indigenous people have not been resolved.⁵²

The São Francisco river project is also raising concerns about the long-term environmental impacts the diversion of water may generate, both for the areas receiving the water and those from which the water is being drawn. First and foremost, the water in the São Francisco River is highly polluted. Brazilian environmental groups allege that municipalities along the river “routinely dump raw sewage into the river” and are demanding that the government implement measures to clean up the water before it is shipped to the northeastern region.⁵³ Attorneys for the state of Bahia complained in a suit to the Brazilian Supreme Court that diverting the river will result in mixing waters from different rivers, changing the pH balance in the water and endangering the local ecosystems. Similarly, the Catholic Bishop Cappio, who went on a hunger strike to protest the project, alleged that the diverted water would increase the salinity in the soil.⁵⁴

Despite the concerns, the court has ruled against all complaints filed against the project, including the case regarding change in pH balance, but environmentalists have continued to protest the project.⁵⁵ The United Nations Development Programme noted in its 2006 Human Development Report on the São Francisco Water Transfer that the National Water Agency was required to “abstract the water needed for the pro-

47. *Brazil*, *supra* note 6.

48. *Evicted*, *supra* note 45.

49. *Brazil*, *supra* note 6.

50. *Evicted*, *supra* note 45.

51. *Analysis*, *supra* note 3.

52. *Evicted*, *supra* note 45. Licenses for construction work began without taking into account any of the impact studies conducted regarding the indigenous peoples. *Id.*

53. *Brazil*, *supra* note 6. Only seventy-four of the 504 cities along the river have adequate sewage systems. Bill Hinchberger, *Rio São Francisco: Brazilian River Threatened*, *brazilmax.com*, Dec. 24, 2005, http://www.brazilmax.com/news.cfm/tborigem/pl_northeast/id/9.

54. *Analysis*, *supra* note 3.

55. *Eleven*, *supra* note 44.

ject.”⁵⁶ The fact that the São Francisco River Basin Committee approved the abstraction rights “is a positive sign” according to the Report because such approval indicates that the committee determined that the environmental and social impacts are going to be minimal.⁵⁷

Finally, critics also argue that the project is going to be an economic drain on the country. The project’s current price tag is set at \$6.03 billion dollars (U.S.).⁵⁸ TCU, the Brazilian group charged with watching federal spending, says that the federal government has severely miscalculated the costs of the project.⁵⁹ All of the funding for the project is coming directly from the federal government because the World Bank has refused to assist in the effort, despite the fact that the project is touted as benefiting the rural poor.⁶⁰ A fact that is rarely mentioned in the discourse about the project is the charges for receiving the water. Critics also contend that the delivery of the water will require a lot of energy, and unless the consumers are willing to pay such costs, the burden will have to be borne by the government long after the project is completed.⁶¹

Understandably, agricultural investors are required to pay for delivery of their water, but unless those financial commitments are secured the financial stability of the project is uncertain.⁶² The states are also required to pay for the water, under the “principle of full cost recovery,” but they must pay an additional tariff for delivery to rural populations.⁶³ This trickle-down effect of financing the transposition by charging downstream users is expected to increase the cost of water to levels at least five times higher than current prices.⁶⁴ Pointing to a recent National Water Agency study that shows “that the water supply problem faced by the Northeast can be solved through 530 decentralized projects in 1,112 municipalities at half the cost of the transposition project,” critics suggest that there are other, more cost-effective means for dealing with the water shortages in the region.⁶⁵

56. U.N. Dev. Programme, Human Development Report Office, *Occasional Paper: São Francisco Water Transfer*, 5, (2006) (prepared by Cecilia Tortajada), available at <http://hdr.undp.org/en/reports/global/hdr2006/papers/tortajada%20cecilia.pdf>.

57. *Id.*

58. *Minister: São Francisco Work to Start By Month-End*, Bus. News Am., Mar. 16, 2007, available at LEXIS-NEXIS Academic. It is important to note, though, that reports are conflicting as to the price, and National Public Radio reports that the project will only cost \$2.3 billion. *Brazil*, *supra* note 6.

59. *Brazil*, *supra* note 6.

60. *Analysis*, *supra* note 3. “A World Bank study argues against granting a loan for the project, since, they reason, the positive effect on poverty reduction could not be proved.” Zellhuber, *supra* note 33.

61. *Brazilian Bishops Urge Lula to Reconsider River Transposition*, BRAZZIL MAG., Aug. 26, 2007, <http://www.brazzilmag.com/content/view/8597/54/>.

62. U.N. Dev. Programme, *supra* note 55.

63. *Id.*

64. Zellhuber, *supra* note 33.

65. *Id.*

IV. CONCLUSION

The São Francisco River transposition project holds great promise for the peoples of the northeastern region of Brazil. The government projects that as many as twelve million people will receive much needed water in the drought-stricken region and that agricultural and industrial business ventures stand to benefit from consistent and adequate water. Critics, however, contend that the project has not been thoroughly evaluated for all of the detrimental effects. They contend, and the government does not expressly deny, that big business will be the primary beneficiary from the project, and that the rural population will not receive as much water as the government contends. There are also environmental and social impacts that the critics feel the government has overlooked, including displacement of indigenous peoples and disruption of their ways of life, each of which has not been resolved, and concerns about the pollution in the water and the repercussions of mixing water. Finally, critics point to the high cost of the project as an underappreciated aspect of the project. Though the government has not fully addressed all of these concerns, at least to the satisfaction of those concerned, work has begun on the project, and, barring other legal setbacks, only time will tell whether the critics' fears are founded, or whether the project will truly bring the much needed relief to what promises to be a very important region for Brazil's future.

Updates

