

REFLECTIVE CASE STUDY:

HEADWATERS PROTECTION WITHIN THE MATA ATLANTICA / RIO PARAIBA DO SUL – DEVELOPING PRIORITY ZONES

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APRIL 8, 2005

Over the past 20 years Brazil's national water policy has evolved to address the reality that water is a finite resource with social and economic value.¹ Links between forest conservation and the quality of water resources have been clearly established, both on an international level² and on the small scale - where individual farmers have noted the relationship that trees have with localized spring flow.³

The Paraíba do sul river basin has a particularly progressive agenda, given its contribution to the water supply of Rio de Janeiro, and its inclusion of three states: Minas Gerais, Rio de Janeiro and São Paulo.⁴ Payment for Environmental Services (PES) schemes were instated in this river basin two years ago, and the 0.02 to 0.08 BRL charge per cubic meter⁵ is currently funding municipal improvements for the water resource – namely for water use efficiency and for the identification and management of resource waste and misuse.⁶ Thus far, the Paraíba do sul river basin is the only river basin committee in Brazil to implement the PES scheme.⁷

The next step required for the evolution of this mechanism is the payment to upstream watershed producers for the conservation of the water resources. Payment would secure the management of surrounding forests to ensure an acceptable level of water quality. Brazilian legislation exists for this purpose,⁸ but areas critical to watershed conservation remain without vegetation (recharge areas, springs, borders of surface water flows, erosion hotspots).

The main reason that these critical areas remain without vegetation is because many landholders use the areas for coffee plantations, grazing, or eucalyptus plantations and every available area of deforested land generates an income. At the moment there exists no financial incentive for farmers to maintain or plant native vegetation. If such an incentive were to be proposed it should equal or exceed the current income value that the farmer receives on an annual basis for the relevant land holding.⁹

In 2000 in Heredia, Costa Rica, a PES scheme was successfully implemented whereby water users pay an additional fee of US\$0.05 per cubic meter tabulated into the monthly water bill. Participating landowners receive a payment of approximately US\$70 /hectare/year in exchange for stewardship of the headwaters - representing the opportunity cost of land use in the upper watershed (primarily marginal dairy farming and abandoned grasslands). These

¹ Porto, M. and Kelman, J. "Water Resources Policy in Brazil"; Rivers – study in the science. ENVIRONMENTAL POLICY AND LAW OF INSTREAM FLOW, v. 7, n.3, 2000. Available at:
http://www.ana.gov.br/jersonkelman/pdf/water_resources_policy_in_brazil.pdf

² Dudley, Nigel and Stolton, Sue; WWF / World Bank report: "Running Pure; the importance of forest protected areas to drinking water". August 2003.

Information about the report available at:

<http://lnweb18.worldbank.org/ESSD/envext.nsf/80ByDocName/ProtectedAreasProtectedAreasManagementRunningPure> ;

Report available at :

[http://lnweb18.worldbank.org/ESSD/envext.nsf/80ByDocName/RunningPureTheimportanceofforestprotectedareasfordrinkingwater/\\$FILE/RunningPure2003+.pdf](http://lnweb18.worldbank.org/ESSD/envext.nsf/80ByDocName/RunningPureTheimportanceofforestprotectedareasfordrinkingwater/$FILE/RunningPure2003+.pdf)

³ See, for example, "Productive Forest Corridors in the Atlantic Rainforest." Evans, Charles; September 2004. Page 41. Available at: www.iracambi.com

⁴ note 2, *supra*.

⁵ Approximately US\$ 0.008 to US\$ 0.031 per cubic meter (1000 L) of water. Payment variations based upon the amount of treatment required for wastewater discharged.

⁶ "Bacias de Minas dão largada à cobrança." *Estado de Minas*; 22 March, 2005.

⁷ *Id.*

⁸ Please see attached appendix for legal and policy breakdown: *Appendix I*

⁹ **FIND REFERENCE:** [cattle / coffee income per hectare for region](#)

monetary values are results from the following two factors: estimates of revenues from traditional land-uses; and the monetary value that local residents give to the provision of water as an environmental service.¹⁰

Such a mechanism may be appropriate for the water producers of the Rio Paraiba do sul, however the General Secretary of Counsel for the Brazilian Ministry of the Environment, João Bosco Senra, states that this direct payment to the upstream water producers will take approximately 30 years to implement.¹¹ However, the 10 million BRL¹² collected per year¹³ are earmarked for PES to protect the water resource.

The Mata Atlantica overlaps with the southeastern headwaters of the Rio Paraiba do sul. For reasons of biodiversity conservation and agroforestry, the area has attracted national and international attention.¹⁴ The principles driving the protection of the Mata Atlantica's biodiversity compliment the efforts of the sustainability of water resources through responsible land management, reforestation, and ecosystem conservation. It is appropriate to adopt a holistic approach and coordinate these efforts to achieve conservation goals.

The current 30-year timescale for PES along the Rio Paraiba do sul, however optimistic, is not sufficient for the protection of the headwaters. Farmers will continue to deforest areas in order to sustain their livelihoods, given no alternative. In order to prevent this from occurring a resource management plan must be affected detailing areas of priority for water resource quality conservation.¹⁵ Certain headwater springs are critical for conservation of the resource, and areas of erosional instability can be identified with survey methodologies to develop a priority list and timeline for action.

Iracambi,¹⁶ situated within the Mata Atlantica zone, provides an opportune base from which these target areas for watershed conservation can be identified. The small NGO provides GIS and GPS tools, and is currently focusing its research efforts on the conservation of remaining primary growth rainforest in conjunction with the delineation of areas requiring reforestation for purposes of biodiversity. The organization is active with the state-level and community-level activities in line with its mission to conserve the Mata Atlantica. Its proximity to the Serra da Brigadeiro State Park¹⁷ and its current activities provide an ideal setting in which to launch a project to identify critical areas for watershed protection and to implement the PES scheme for these areas as a pilot project.

¹⁰ Gamez, Luis - Advisor, Public Utilities Company of Heredia (ESPH) and Ministry of Environment & Energy (MINAE). "Economic –Ecological Valuation of Water Resources in Costa Rica; A Practical Application in the Internalization of Environmental Benefits". Available at : <http://epp.gsu.edu/pferraro/special/SCBGamez.pdf>

¹¹ *Id.*

¹² Approximately 3.87 million US\$ at the time of writing.

¹³ *Id.*

¹⁴ UNESCO Biosphere reserve, area of national attention for the Brazilian Ministry of the Environment. See: <http://www.mma.gov.br/ascom/ultimas/index.cfm?id=1634>; <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?code=BRA+01&mode=all>; http://www.rbma.org.br/default_02.asp

¹⁵ In conjunction with delineated APA areas (Areas of Environmental Protection)

¹⁶ See <http://www.iracambi.com/english/amigos.shtml> for mission statement and objectives

¹⁷ The Serra da Brigadeiro state park, established in 1996, is situated in the state of Minas Gerais and constitutes of approximately 13,210 hectares, and feeds water into both the Paraiba do sul and Rio Dulce water basins. See : <http://www.ief.mg.gov.br/parques/brigadeiro/brigadeiro.htm> and http://www.asminasgerais.com.br/Zona%20da%20Mata/venhameVERDEperto/serra_do_brigadeiro/serra_do_brigadeiro.HTM for more information