Compensation at Rio de Janeiro: the Biodiversity Conservation Mechanism

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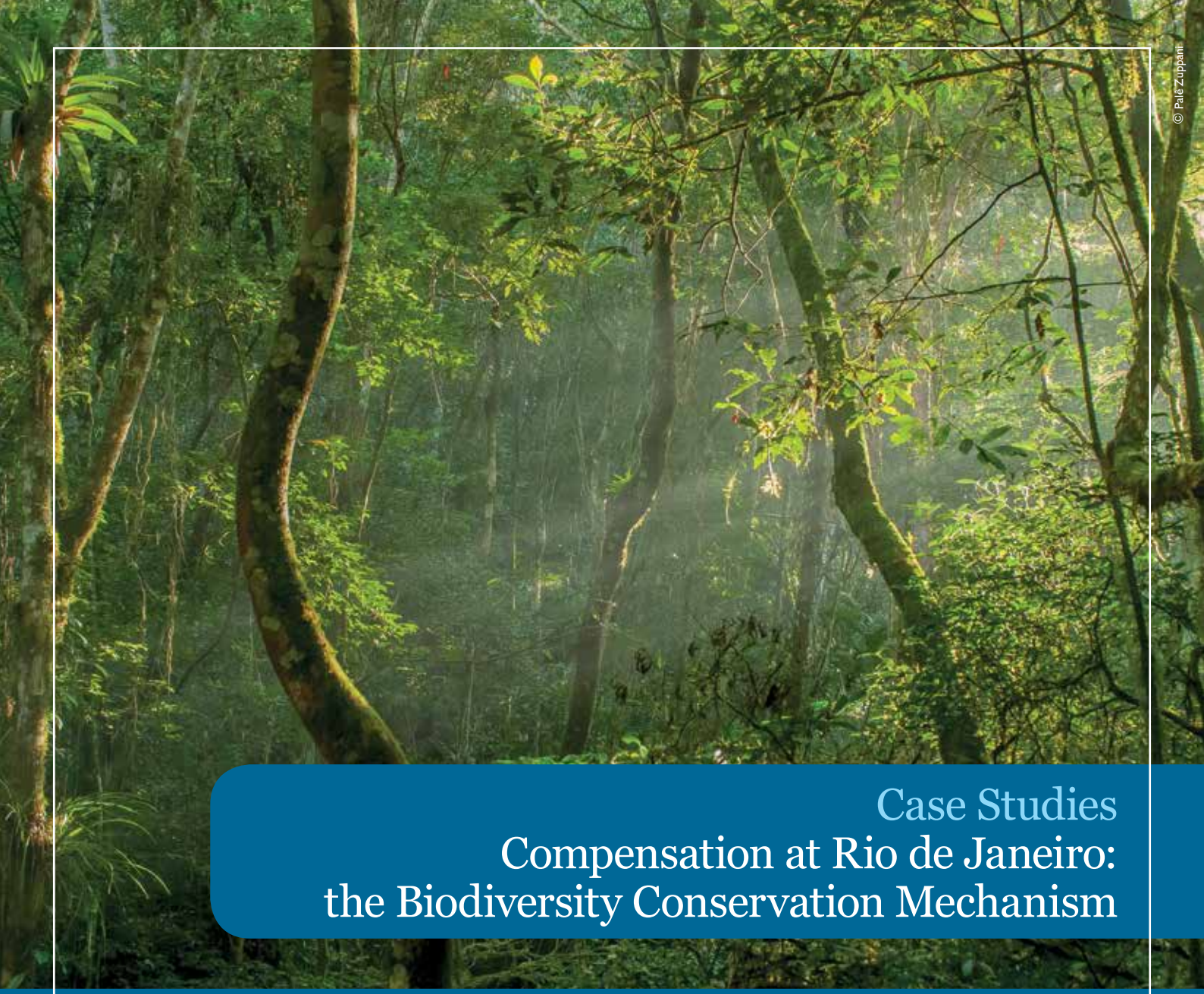
Brazil | 2014

Latin American and Caribbean
Network of Environmental Funds



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Case Studies
Compensation at Rio de Janeiro: the Biodiversity Conservation Mechanism

1. Introduction

This case study will describe the Biodiversity Conservation Mechanism (known as FMA/RJ for its name in Portuguese -Fundo da Mata Atlântica-) in the state of Rio de Janeiro, in Brazil. This mechanism was designed to receive a variety of financial resources that should be dedicated to protected areas and biodiversity protection in the state. It has been operating since 2010 with resources from the environmental compensation mechanism that was established by the Law for the National System of Conservation Units (known as SNUC Law for its name in Portuguese), and has mobilized a significant amount of funds for the conservation of Protected Areas. In this case we will analyze the establishment of the FMA/RJ as a management plan for those compensation funds as well as its future and the possibility of replication in other Brazilian states.

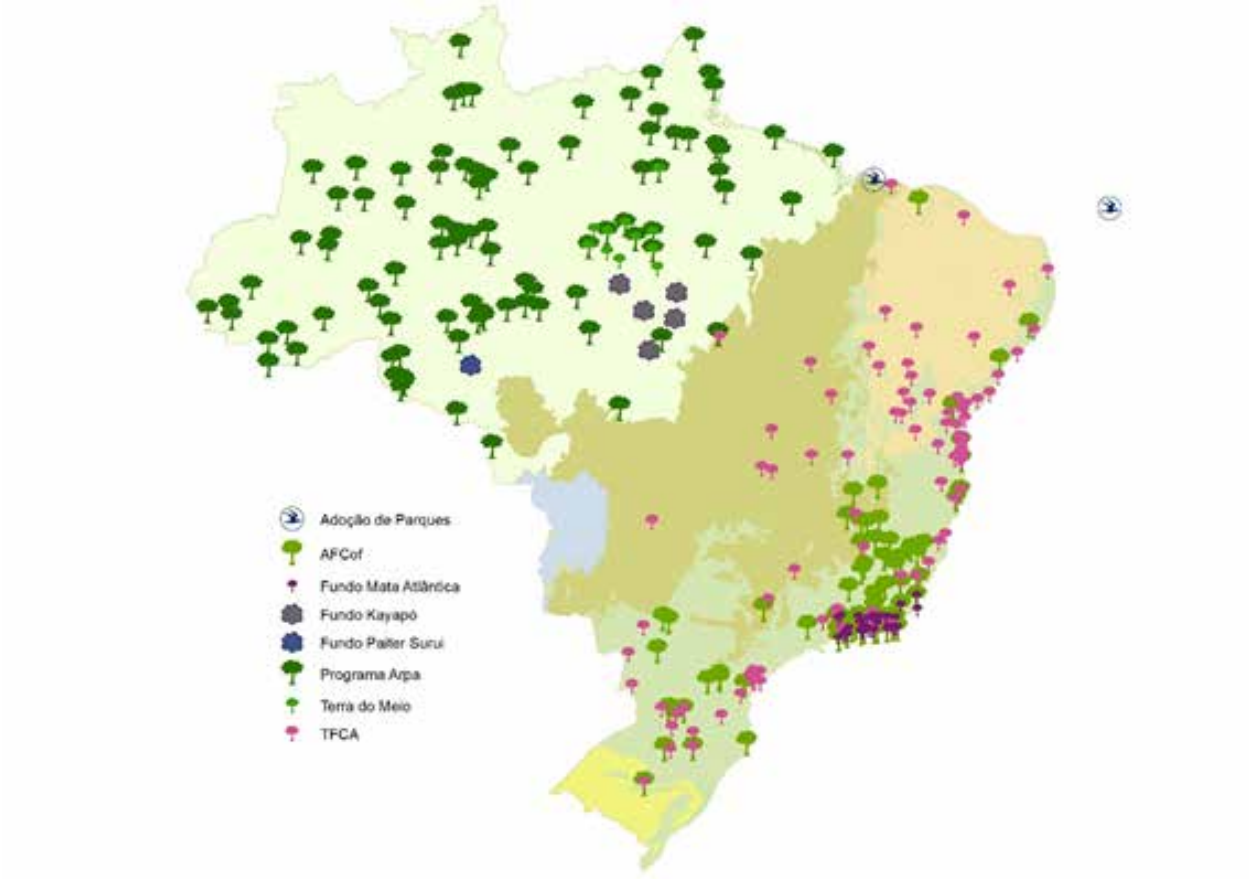
2. Conservation in Brazil

Brazil has one of the largest economies in the world and, among other traits, is characterized by several of the richest biomes on the planet. These two facts are linked because Brazil's natural resources support its economic growth. However, the latter does not imply that the conservation of natural capital has been a priority for this country. The permanent depletion of natural resources in the last few decades has turned conservation into one of the most urgent matters of concern for the government, international cooperation agencies, the private sector and society as a whole[1].

[1] Maretti, Claudio et. al. Protected Areas and Indigenous and Local Communities in Brazil. http://cmsdata.iucn.org/downloads/cca_cmaretti.pdf

The Brazilian Amazon Region and the Atlantic Rainforest (Mata Atlântica in Portuguese) are the most exemplary eco-regions in the country. The former covers around 50% of the territory and the latter harbors around 80% of the country's population (more than 200 million people[2]) in 17 states and generates more than 70% of the Gross Domestic Product (GDP). This presents different challenges; for instance, in the Atlantic Rainforest, the high level of human inhabitants, dating back to the colonial period, has put great pressure on the ecosystem[3]. Mining, logging, cattle-raising, crop planting, housing and infrastructure projects require better planning of resource extraction. The different intra-generational and inter-generational equity effects must be considered, as well as how those activities could ensure fair distribution of the wealth that comes from nature now, and the possibility of preserving its benefits for the future[4].

Figure 1 Brazilian Biomes and Funbio's main programs that support protected areas.



Source: Funbio – Alexandre Ferrazoli Camargo

The establishment of protected areas is a well-known instrument used to control the expansion of human exploitation in natural areas. Protected areas are also recognized as a direct instrument focused on the protection and maintenance of biological diversity and ecosystem services, as well as natural and cultural resources. It might be difficult to determine the current proportion of territory that is protected in Brazil as well as the quality of its management because the Brazilian national system has three levels of protected areas: federal, state and municipal which make up almost 26% of its total territory[5].

The National Constitution states that the conservation of both the environment and natural capital is a right and a duty of all citizens as well as an obligation and responsibility of all three levels of the government. The other two lower levels should use the national laws and categories as models, but each one can create different management categories[6].

2.1. General Management Categories for Conservation Units

Protected areas in Brazil are established on both conservation units and indigenous lands and seek to preserve and protect fauna, flora, and the environment as a whole, as well as the culture and way of life of indigenous peoples[7].

[2] https://www.cia.gov/library/publications/the-world-factbook/geos/br.html
[3] Maretti, Claudio et. al. Protected Areas and Indigenous and Local Communities in Brazil. http://cmsdata.iucn.org/downloads/cca_cmaretti.pdf
[4] UNEP. Training manual on international environmental law. 2006.
[5] World Bank. The Little data book. 2014. http://data.worldbank.org/sites/default/files/wb-ldb_green_2014-crpd.pdf
[6] Maretti, Claudio et. al. Protected Areas and Indigenous and Local Communities in Brazil. http://cmsdata.iucn.org/downloads/cca_cmaretti.pdf
[7] http://teen.ibge.gov.br/mao-na-roda/protecao-ao-meio-ambiente-unidades-de-conservacao-e-terras-indigenas

The Federal Government assigned conservation units as areas of special natural interest, legally recognized by the State and protected with defined objectives and boundaries. Conservation units can be created by federal, state or local governments and, according to Law No. 6938/1981; they are one of the instruments of the National Policy on the Environment[8].

Conservation units are divided into different categories depending on the government level, but as previously mentioned, there are some general categories, which are outlined in the following table:

Table 1 Categories of conservation units

Category	UICN Category	Description
Strict protection		
Ecological Station	**Ia**	This area has the objective of preserving and promoting authorized scientific research. Natural resources are allowed to be used but consumption, collection and destruction of any of these resources is forbidden. Public visitation is prohibited, except for academic purposes.
Biological Reserve	**Ia**	In this type of conservation unit the idea is to preserve the remaining areas without modifications and direct human intervention. Public visitation is prohibited, except for academic purposes.
National Park	**II**	This is the most popular and oldest category whose objective is to preserve highly relevant ecosystems and those with exceptional scenic beauty. Scientific research, educational activities, natural interpretation, recreation and eco-tourism are permitted.
Natural Monument	**III**	Its main objective is to conserve places with exotic, singular and beautiful ecosystems. Visitation and authorized research are permitted.
Wildlife Refuge	**III**	Its goal is to protect natural environments that ensure conditions which support the existence and reproduction of local and migratory species.
Sustainable use		
Environmental Protection Area	**V**	Extensive area with a certain degree of human occupation. It has biotic, abiotic, esthetical or culturally important attributes for human welfare. Its objective is to protect biodiversity and to ensure the sustainable use of resources.
Relevant Ecological Interest Area	**IV**	This area is generally small and has little to no human occupation. It is characterized by rare and singular local or regional nature.
National Forest	**VI**	This area is mainly covered by native trees where sustainable use and scientific research are fostered.
Extractive Reserve	**VI**	This unit is used by traditional populations that depend on agriculture and small animal farming; and has the objective of preserving traditions. Public access is allowed if it is compatible with local interests.
Fauna Reserve	**VI**	Area with terrestrial and aquatic populations, resident or migratory animal species. The objective is to develop a scientific and technical economic management of fauna resources.
Sustainable Development Reserve	**VI**	Natural area that houses traditional populations with sustainable systems to exploit natural resources.
Private Reserve of Natural Heritage	**IV**	Conservation unit established on private land that acquires tax exemption, which seeks to conserve biological diversity that exists there and establish sustainable use of natural resources (restricted to ecotourism).

Source: ICMBio[9]

Indigenous lands are owned and created by the Brazilian Federation for the use of indigenous groups[10]. Indigenous lands are not stricto sensu protected areas and they do not have nature conservation goals. The National Constitution defines Indigenous Lands as those where "they live on a permanent basis, those used for their productive activities, those indispensable to the preservation of the environmental resources necessary for their well-being and for their physical and cultural reproduction, according to their uses, customs and traditions". Nevertheless, several

[8] http://www.tecsi.fea.usp.br/eventos/Contecsi2004/BrasilEmFoco/ingles/meioamb/arprot/snuc/index.htm

[9] Institute Chico Mendes for Biodiversity conservation (ICMBio) is a public institution to foster and implement programs of research, protection, preservation and conservation. It also acts as the environmental police in the federal conservation units. http://www.icmbio.gov.br/portal/biodiversidade/unidades-de-conservacao/categorias

[10] Maretti, Claudio et. al. Protected Areas and Indigenous and Local Communities in Brazil. http://cmsdata.iucn.org/downloads/cca_cmaretti.pdf

of those areas maintain a well conserved status. They represent around 12% of the Brazilian terrestrial territory. These areas are "vital for the preservation of the natural resources" (1988 National Constitution)[11].

2.2. National System of Conservation Units

The National System of Conservation Units is the integration of federal, state and municipal conservation units. It is composed of the 12 management categories mentioned in Table 1. The national system was created in 2000 through Law 9.985. It establishes the official set of guidelines which enable different government levels and the private sector to create, implement and manage the conservation units. Its main objective is to enhance the role of the conservation units, assuring that significant ecological population samples of different habitats and ecosystems are highly represented in the national territory and territorial waters[12].

The next table shows information about conservation units by biome:

Table 2 Conservation units by biome

	Atlantic Forest	Amazon	Caatinga	Cerrado	Pampa	Pantanal	Marine area
Total area (ha)	111,018,200	419,694,300	84,445,300	203,644,800	17,649,600	15,035,500	355,576,900

	Atlantic Forest			Amazon		
Group	N°	Area (ha)	%	N°	Area (ha)	%
Strict protection	331	2,731,100	2%	77	41,111,400	10%
Sustainable use	679	8,115,000	7%	237	70,121,200	17%
Total in the biome	1010	10,846,100	10%	314	111,232,600	27%

	Caatinga			Cerrado		
Group	N°	Area (ha)	%	N°	Area (ha)	%
Strict protection	32	969,900	1%	115	6,273,600	3%
Sustainable use	97	5,356,000	6%	247	1,171,000	1%
Total in the biome	129	6,325,900	7%	362	7,444,600	4%

	Pampa			Pantanal		
Group	N°	Area (ha)	%	N°	Area (ha)	%
Strict protection	10	61,400	0.3%	7	440,400	3%
Sustainable use	11	4,249	0.0%	17	255,100	2%
Total in the biome	21	65,649	0.4%	24	695,500	5%

	Marine area		
Group	N°	Area (ha)	%
Strict protection	62	475,400	0.1%
Sustainable use	89	4,901,700	1.4%
Total in the biome	151	5,377,100	1.5%

Source: Environmental Secretariat of Rio de Janeiro

3. The State of Rio de Janeiro

Rio de Janeiro is one of the 27 states in Brazil. It has a total area of 14,653 square kilometers which makes it as one of the smallest states in Brazil; however it is the third most populated state (with more than 16 million inhabitants) and has the third longest coastline in the country[13]. Residents and land are organized into 92 municipalities.

The State of Rio de Janeiro has the second largest GDP. The industrial sector is the most important (approximately 51% of its GDP), with oil extraction being one of its main activities. Many international companies, such as Shell, EBX and Esso, have

[11] Ibid.
[12] http://www.mma.gov.br/areas-protegidas/sistema-nacional-de-ucs-snuc
[13] http://www.brazil.org.za/rio-de-janeiro.html#.U_ypdvmSzyA

branches and headquarters in this State. In the service sector, banking is very relevant since Rio's stock exchange Bolsa da Valores is the second most dynamic stock market in Brazil. Other important economic sectors in the state of Rio are the agricultural production of sugar-cane, oranges and coffee. Of course, tourism also plays an important role, mainly in the capital city: Rio de Janeiro. All of these sectors require great expansion of infrastructure for further support[14].

The State of Rio is characterized by the combination of economic development with environmental protection. It is a well-known fact that, in 1992, Rio de Janeiro hosted a United Nations event whose focus was the environment and which was attended by heads of state. This event, Rio 92, was considered one of the largest conferences ever held on the planet and was also a landmark event for the topic of sustainability. In 2012, Rio hosted Rio +20, an event to celebrate twenty years of the United Nations Conference on Environment and Development (Rio 92), and whose objective was to help define the world's sustainable development agenda for the following decades[15].

The State Government has proved its commitment to keeping economic development in harmony with natural conservation. It has established several programs to improve waste management, reduce greenhouse emissions, foster the green economy, adapt to climate change, change towards renewable energy sources and protect biodiversity through the creation and expansion of state parks. All of these policies have been promoted and coordinated by the Environment State Secretariat of Rio de Janeiro (SEA/RJ) and Environment State Institute of Rio de Janeiro (INEA/RJ[16]) which is bound to SEA/RJ. All of them are supported by municipalities and NGO's[17].

3.1. The Conservation Panorama

The state of Rio de Janeiro is characterized by its high biodiversity because of its location with an assortment of geographical formations and habitats. In this region, where endemism is very high, the predominant ecosystem is the Atlantic Rainforest which covers coastal regions as well as inland areas on mountains and plateaus, from northeastern to southern regions of Brazil as well as northern Argentina and southeastern Paraguay. Humidity and rainfall are constant. History tells that about 97% of the State's territory was covered by Atlantic Rain Forest, but now it has been reduced to less than 19% of the original area. Moreover, it continues covering around 20% of the local vegetation[18] and that same portion represents the remaining Atlantic Forest in the

[14] http://www.v-brazil.com/information/geography/rio-de-janeiro/economy.html

[15] http://www.theclimategroup.org/who-we-are/our-members/state-of-rio-de-janeiro

[16] INEA: its function is executing the environment state policies on hydric and forest resources. It is decentralized and has nine regional offices.

[17] http://www.theclimategroup.org/who-we-are/our-members/state-of-rio-de-janeiro

[18] Pinheiro da Costa, Denise; Paranhos de Faria, Clarisse. Conservation priorities for bryophytes of Rio de Janeiro State, Brazil. Journal of Bryology (2008).

> **“History tells that about 97% of the State’s territory was covered by Atlantic Rain Forest, but now it has been reduced to less than 19% of the original area”**

entire region[19]. This area has been the focus of multiple initiatives to stop main current threats: deforestation related to land conversion and charcoal production, soil erosion caused by deforestation, overgrazing and inappropriate agricultural practices[20]. Infrastructure projects for city expansion and, for nonrenewable resources, extraction also drives forest degradation.

3.2. The Atlantic Forest

The Atlantic Forest in Brazil is among the most endangered rainforests in the world. But despite its mass destruction where more than 80% of the forest has been depleted, it still contains impressive diversity of plants and animals (its level of biodiversity is occasionally compared to the Amazon), many of them are endemic to the Atlantic Forest and threatened with extinction[21]. As a result of this, its protection has become a top priority.

The future of the Atlantic Forest in the country is even less promising because around 80% of the Brazilian population is settled in this biome. The largest cities such as Sao Paulo, Rio de Janeiro, Recife and Salvador are located in this region. Human pressure related to high population density reduced the Atlantic Forest to a mere 8% of its original national area. The State of Rio has been working to conserve it from its own jurisdiction and is now recognized as the state that best preserves its tropical vegetation[22].

The remaining land of the Atlantic Forest contains around 2,200 species of birds, mammals, reptiles and amphibians (5% of the vertebrates on Earth). It includes nearly 200 bird species found nowhere else in the world, and 60% of all of Brazil’s threatened animal species dwell here. Brazil is the world’s leader in primate diversity, with 77 species and subspecies identified to date. Of these, 26 are found in the Atlantic Forest, of which 21 are found nowhere else in the world. Some of the Atlantic Forest’s most charismatic species include the golden lion tamarin, wooly spider monkey, red-tailed parrot, and maned three-toed sloth. Tree diversity is also one of the highest in the world, and in some parts over 450 different species have been identified in a single hectare. These forests also have a huge variety of other plants, including ferns, mosses, lianas, orchids and bromeliads[23].

Effectively managed protected areas safeguard biodiversity for future generations, and also conserve critical environmental services such as water supply. Local communities also benefit in many direct ways, by means of improvement of recreation facilities and income[24]. Having more and better managed protected areas is an important way to preserve this biome that is currently being reduced to mere green dots among the urban sprawl.

The total protected area within the Atlantic Forest was approximately 10.9 million hectares by 2014; almost 10% of the region. This area conserves 14.4% of the forest’s coverage. Scientific studies have shown that management of regions as a whole must begin with the transformation of large mature forest territories into conservation reserves and also with the restoration of key connectivity links between the larger remnants[25].

Some efforts to improve the current situation and the conservation of the Atlantic Forest include the establishment of the ‘Atlantic Forest Biosphere Reserve’, which extends through 14 Brazilian states the Brazilian Natural World Heritage Sites Program and the Central Biodiversity Corridor. A range of organizations, such as WWF, SOS Mata Atlântica, The Nature Conservancy, REGUA and the World Land Trust, are also working to protect and restore the forest, to expand protected areas, and to raise awareness through environmental education. Initiatives are focused on some of the Atlantic Forest’s most charismatic ‘flagship’ species, such as the lion tamarins and muriquis. Those organizations have al-

[19] World Bank. Expanding Financing for Biodiversity Conservation http://www.worldbank.org/content/dam/Worldbank/document/LAC-Biodiversity-Finance.pdf

[20] http://www.adaptationlearning.net/project/rio-de-janeiro-sustainable-integrated-ecosystem-management-productive-landscapes-north-north

[21] http://www.wwf.org.uk/where_we_work/south_america/atlantic_forest/brazil_s_atlantic_forests.cfm

[22] http://www.ambienteantiga.rj.gov.br/revista_economia_verde/index.html

[23] http://www.nature.org/ourinitiatives/regions/southamerica/brazil/placesweprotect/atlantic-forest.xml

[24] http://www.wwf.org.uk/where_we_work/south_america/atlantic_forest/brazil_s_atlantic_forests.cfm

[25] Ribeiro, Milton Cezar, et al. The Brazilian Atlantic Forest: How much is left, and how is the remaining forest distributed? Implications for conservation. Biological Conservation 2009. http://www.dpi.inpe.br/reference/arq/26_Miltinho/Ribeiro_et_al_biocons_2009_authorscopy.pdf

ready helped to raise awareness and increase forest protection[26]. The government passed Law 11.428 in December 2006 to support protection in this region. It stated principles for the use and protection of vegetation in the Atlantic Forest biome. Under this law, conservation units have the right to be protected in their surroundings and the prevalence of establishment when a conflict of interest may arise in a specific zone[27].

About 30% of the Atlantic Forest in the State of Rio is located within conservation units. The SEA declared that in the last seven years, the State became the leader of protected areas in the country and by 2013 the number of hectares arose to 204 thousand hectares, meaning approximately 14% of the total area of the State[28]. However, these conservation units need to be better managed and interconnected which demands more funding that the public sector is able to provide.

3.3. The SNUC in Rio de Janeiro

In the State of Rio de Janeiro, there are 437 conservation units, 84 of them are managed by the federal government, 90 are managed by the state and 263 by municipalities. The management and government categories of these units are shown in the following table.

Table 3 Conservation units in the State of Rio de Janeiro

		Administrative level			
Group	**Category**	**Federal**	**State**	**Municipal**	**Total**
Strict protection	Ecologic Station	2	2	2	6
	Biological Reserve	3	3	9	15
	National Park	5	13	81	99
	Natural Monument	1		16	17
	Wildlife Refuge			2	2
	Private Reserve of Natural Heritage State/Municipality		55	5	60
	Ecological Reserve		1	3	4
	Municipal Nature Reserve			1	1
Total Strict protection conservation units		**11**	**74**	**119**	**204**
Sustainable use	Environmental Protection Area	5	16	124	145
	Relevant Ecological Interest Area	1		17	18
	National Forest	1			1
	Extractive Reserve	1			1
	Sustainable Development Reserve			2	2
	Private Reserve of Natural Heritage Federal	65			65
	Municipal Forest			1	1
Total Sustainable use conservation units		**73**	**16**	**144**	**233**
Total conservation units		**84**	**90**	**263**	**437**

Fuente: INEA[29]

3.4. Conservation Units Funding

Brazil is below the minimum percentages of the global level agreed upon in conventions for Biodiversity Protection of ecosystems and biomes. Existing units still have a generally skewed distribution in terms of categories, regions and biomes and many other problems within the SNUC, such as land tenure issues, lack of personnel, poor funding and inadequate management[30].

Sources of financing for protected areas must be amplified and the mechanisms for transferring funds to them must be transparent. They also must guarantee the coherent allocation of what is collected, not only to the management bodies, but also in such a way as to strengthen sustainable initiatives and productive chains that involve

[26] http://www.arkive.org/eco-regions/atlantic-forest/
[27] http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2006/Lei/L11428.htm
[28] http://www.bgci.org/resources/article/0582/
[29] INEA, 2014. http://www.hidro.ufrj.br/perhi/documentos/PERHI-RE-18-Unid-Conserva%C3%A7%C3%A3o.pdf
[30] Drummond, José et al. A Historical Overview of their Creation and of theirCurrent Status. http://www.academia.edu/3317741/Brazilian_Federal_Conservation_Units_A_Historical_Overview_of_their_Creation_and_of_their_Current_Status

traditional knowledge of the involved communities. Other sources of financing, such as the Environmental Compensation Fund, and the international cooperation initiatives, are key tools for ensuring the future of conservation units and indigenous lands as instruments of rainforest conservation. In order to optimize investments and the efforts involved, it is still necessary to take on the challenge of creating protected areas in a participatory manner and to consolidate territorial plans to manage them, with a focus on a shared socio-environmental agenda[31].

The achievements of SEA are not just a result of its traditional operation (e.g. funding through public budget) but a product of the strategic alliance with the Environmental Fund: Brazilian Biodiversity Fund (Funbio) to develop the Biodiversity Conservation Mechanism (FMA/RJ), a mechanism that better fulfills the conservation units' requirements[32].

4. Brazilian Biodiversity Fund - Funbio

The Brazilian Biodiversity Fund (Funbio) is a registered non-profit civil association. It started operating in 1996 as an innovative financial mechanism for the development of strategies that contribute to the implementation of the UN Convention on Biological Diversity (CBD) in Brazil. Throughout its 17-year existence, Funbio has been a strategic partner for the private sector, different state and federal authorities, and organized civil society. Thanks to these partnerships, it has been possible for the companies involved to make social investments, and reduce and mitigate their impact, while they fulfill their legal obligations. In the public sphere, they serve to consolidate conservation policies and enable environmental funding programs[33].

For its creation (during the design of a World Bank-GEF project), various alternatives were considered. One of these was the integration of Funbio in the National Environmental Fund (FNMA). This option was rejected because FNMA is a government institution and subject to the normal volatility of change in governments and procedures. In addition, being part of a public institution could have reduced opportunities for engaging the private sector in participating as a partner in a project for which one of the fundamental purposes is to explore innovative financial mechanisms in cooperation with the business sector[34].

Funbio was established as an independent project, and later in 2000 was established as a private institution, with a GEF grant of 20 million dollars in sinking funds, with Funbio agreeing to raise an additional 5 million dollars in national counterpart funding. The GEF disbursed half of the 20 million dollar capital at the beginning of the project and required the national counterpart funding to be raised, before the second tranche of the GEF funding could be released[35]. In the third year, with the "Partnership Funds" initiative, Funbio leveraged $ 6.5 million and received autonomy over the use of the remaining resources[36].

"The achievements of SEA are not just a result of its traditional operation (e.g. funding through public budget) but a product of the strategic alliance with Funbio to develop the FMA/RJ"

Up to now, Funbio has managed about 477 million dollars, of which 80% were dedicated to Protected Areas, mainly to the Amazon and the Atlantic Forest regions. The ARPA program in the Amazon mobilized more than 180 million dollars since its beginning in 2003 and has the goal of composing a 215 million dollar fund to consolidate 60 million hectares of protected areas in the biome. The FMA/RJ already mobilized 150 million dollars for the Atlantic Forest protected areas in the state of Rio. The debt-for-nature swap between the USA and Brazilian governments, under the TFCA agreement, brought 20 million dollars to the Atlantic Forest, Caatinga and Cerrado biomes, under Funbio's management. Additionally, other programs such as the Atlantic Forest Conservation Fund (AFCoF) financed by the German government with 12 million dollars and three GEF funded projects that together total almost 10 million dollars more.

The organization raises and distributes economic resources to finance activities with biodiversity conservation objectives. It is an intermediary between sources of funding and project implementing organizations, seeking to support the Protected Areas agenda and to develop environmental enterprises that are sustainable. It works to complement government actions, in accordance with the Convention on Biological Diversity (CBD) and the National Biodiversity Program. FUNBIO´s clients include private sector partners and NGOs, as well as local communities and governments that are

[31] IAMAZON. Protected Areas in the Brazilian Amazon. 2011.
[32] http://www.inea.rj.gov.br/cs/groups/public/documents/document/zwff/mde0/~edisp/inea_014682.pdf
[33] http://www.funbio.org.br/en/o-funbio/quem-somos
[34] National Environmental Funds in Brazil
[35] Ídem.
[36] World Bank ICR report, 2004

implementing projects for conservation and sustainable use of biodiversity. Funbio's vocation is to attract additional contributions from the private sector, including businesses and NGOs.

4.1. Funbio's Operation[37]

The highest decision-making body at Funbio is the Board of Directors, referred to as a Governing Council, comprising 16 leaders from distinct segments of society who are involved in biodiversity conservation in Brazil (four non-governmental (NGO) representatives, four private sector representatives, four academics and four government representatives). Members are selected to ensure a balance in geographic representation, with leadership in biodiversity conservation as the most important criteria for selection. One-fourth of the members are up for election each year.

Funbio's operations are managed by an executive committee, permanent and ad hoc technical committees and an executive secretariat. The technical committees conduct analysis and supervision and are organized by specific expertise, the permanent ones are in the following areas: (1) Finance and auditing; (2) Asset management; and (3) Fauna. The technical committees are made up of members of the Governing Council and individuals are invited to participate based on their areas of expertise.

Funbio's mission is currently stated to provide strategic resources for the conservation of biodiversity. Funbio does this in the following ways:

- Identifying key investment needs and opportunities.
- Creating new financial instruments and financing mechanisms.
- Supporting programs and sustainable investments.

One of the contributions of environmental funds to environmental management is the impact that they can have on policy and operational practices. FUNBIO provides an example, during its initial years of operation, some of its institutional processes and practices served as a model for other NGOs and government agencies. This was the case with its project review and selection process, and its operational systems.

Some of the major challenges that FUNBIO has faced include the lack of legislation promoting or supporting financial donations to NGOs, which has limited FUNBIO's local fundraising efforts[38]. Fortunately, this fact has changed as shown in the next section.

5. The Environmental Compensation

The environmental compensation mechanism in Brazil exists to compensate environmental damages caused by implementing development projects that could not be prevented or mitigated. The approval process to get the license to install or operate a project requires using the best methodologies available for two types of measures: mitigation and compensation. Mitigation measures are ten times more productive in terms of volume and resources than compensation measures. Nevertheless, there is an estimate that the compensation amounts, including both federal and state resources, reach about 500 million dollars[39].

Compensation is established as a value by a federal law, more specifically, Law 9.985/00 (the one that created the SNUC), where in article 36 it is stated that the offset corresponds only to those projects generating damages as shown in the environmental impact assessment[40] and obliges developers to help by implementing and maintaining the conservation units of the Strict Protection Group[41].

The federal Law establishes an offset of up to 0.5% of the total amount invested in the business to create or support conservation units. Some of the activities undertaken are the plans and studies, land tenure regularization, purchase of materials, or the procurement of services. One of the main uses of these funds is to support the creation of management plans of several of these conservation units.

[37] Funbio annual report 2013
[38] National Environmental Funds in Brazil
[39] According to ICMBio estimative and secondary data.
[40] The environmental impact assessment (EIA) should be presented to the INEA as it is a requirement to get the license to install a development project (Constitution of Brazil. Article 224. IV)
[41] Integrated Conservation Group: it consists of the conservation units with a strict protection category of management. This group is prioritized, but when there are direct impacts on a unit of sustainable use, it should be benefit by the compensation measures. As a rule, each impacted PA should benefit.

The 0.5% works as a model for the states which can be modified and have Rio de Janeiro as a pioneer in this kind of measure establishing a 1.1% of the investment. In the original model, to apply these resources, developers were responsible for executing compensation resources or in some cases making deposits to public accounts. Having a third party contracted to execute this offset was also an option[42].

Some problems arose with this model, for example the conservation units were not being helped as expected. It was difficult to verify the right application of the resources, and money entering into the public dominium was an object of bureaucratic processes and was available for different uses in case of emergency. Developers also expressed that it was difficult for them to meet the environmental requirements of the compensation due to their business core[43].

5.1. Origin of the Biodiversity Conservation Mechanism in the State of Rio de Janeiro – FMA/RJ

In the pursuit of a solution for the difficulties found in fulfilling the goal of maximizing the scope of positive outcomes derived from the environmental compensation, in 2007, the Environmental Secretary at SEA/RJ, Carlos Minc, had the idea to outsource developers' management services to another institution that could accomplish those environmental responsibilities. To execute this, Carlos Minc asked for the opinion of the General Attorney of the State, Tostes de Alencar Mascarenhas, and through dictum 04/09-RTAM-PG-, he opened the way to let INEA outsource management.

The dictum concludes: a) funds coming from the environmental compensation and under the accomplishment of Law 9985, are not considered public, b) the correspondent amount can be paid by the developer to a Public Interest Organization of Civil Society (OSCIP, in Portuguese) which would be contracted directly by the State of Rio de Janeiro, and c) the operational costs related to this measure application can be covered with compensation resources.

In December 2007 the SEA/RJ hired Funbio to design a mechanism that would make it viable to manage and execute the State's environmental compensation. Originally, private developers were responsible for executing compensation resources themselves. With this mechanism, private developers may choose between direct execution, contracting a third party to execute resources under their responsibility, or work through the FMA/RJ[44].

[42] Funbio. Presentation on FMA/RJ.
[43] André Ilha. Former Director of the INEA.
[44] Funbio. Biodiversity Conservation Mechanism in the State of Rio de Janeiro – FMA/RJ.

> **With this mechanism, private developers may choose between direct execution, contracting a third party to execute resources under their responsibility, or work through the FMA/RJ**

The FMA/RJ was designed by Funbio based on the ARPA experience; a federal program was successful in the task of supporting protected areas in the Amazon. In 2007 691,5 thousand dollars[45] were invested in the design process and the product was the financial and operational mechanism developed to provide agility, efficiency, and transparency to a portfolio aimed at strengthening state and municipal protected areas, including projects focused on conservation and restoration of the state's biodiversity and also applying economies of scale. An interesting matter is that the FMA/RJ was designed in a flexible fashion, allowing it to receive resources from several sources, not only environmental compensation resources.

In 2008, a pilot phase was carried out with an environmental compensation of the company's Thyssenkrupp CSA's Siderúrgica do Atlântico project for a total of 1.6 million dollars and a donation from KfW of 200 thousand dollars. In December 2009, in a pilot phase, an agreement was signed between SEA/RJ and Funbio for operation, maintenance and control of FMA/RJ which currently benefits conservation units in Rio de Janeiro, and is also able to support other conservation efforts.

FMA/RJ enables the state to capture funding from different sources, such as contributions from environmental compensations, voluntary donations, domestic and international grants, and carbon credits. Through Funbio, the terms and conditions can be agreed upon with each source to meet the needs of the projects. The largest funding source so far is compensations for environmental impacts paid for by industrial and infrastructure projects. In addition, the FMA/RJ hosts an endowment fund intended to support recurrent costs of protected areas on a long-term basis[46].

5.2. FMA's Achievements[47]

The FMA/RJ is an innovative mechanism because it presents a solution to a long running difficulty in the state of Rio regarding the management and execution of environmental compensation resources. It directs millions of dollars (that would otherwise be constrained by administrative barriers) to local protected areas.

This model is currently being replicated in other Brazilian states (Minas Gerais, Pará, Paraná, Amapá, Amazonas and Rondônia), and could be applied in any scenario when a private company has to fulfill legal environmental obligations. In accordance with local law and government, the Fund may play the role of facilitator by designing and executing solutions for compensation and biodiversity conservation.

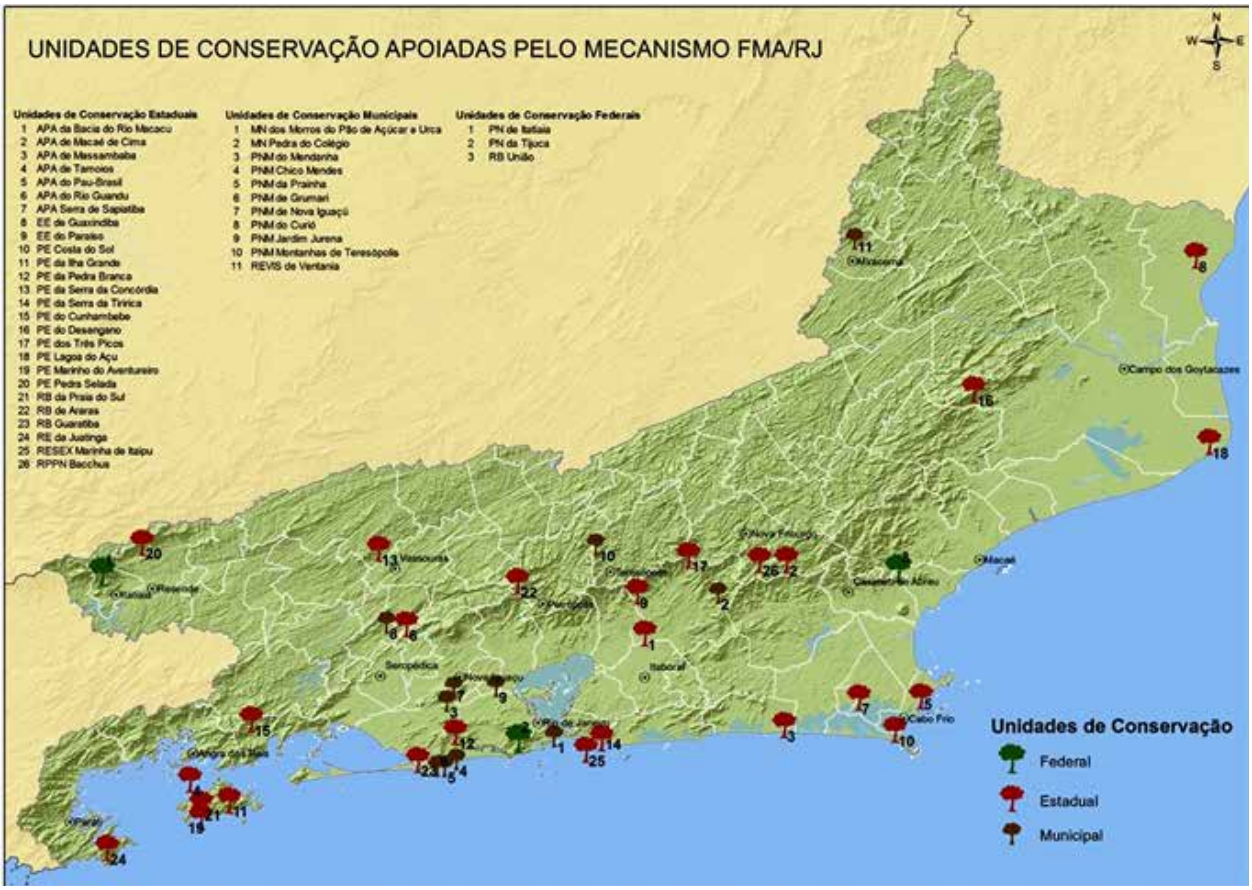
As of December 2013, FMA/RJ has a portfolio of over 150 million dollars in resources from environmental compensation, out of which over 30 million dollars has already been executed. As of December 2013, 76 businesses have chosen the mechanism for compensating. In 2012, an endowment fund of over 10 million dollars was created to cover recurring costs of state conservations units in the long term.

In total, FMA/RJ has benefited in 40 protected areas in Rio de Janeiro, including:

- Projects to elaborate/implement management plans.
- Projects for architecture design.
- Projects for infrastructure building.
- Projects to strengthen and support PA management.
- Projects of land tenure regularization.

[45] Funbio. Presentation on FMA/RJ.
[46] http://www.worldbank.org/content/dam/Worldbank/document/LAC-Biodiversity-Finance.pdf
[47] Funbio, 2014.

Figure 2 – Protected Areas benefited by FMA/RJ



Source: Funbio - Alexandre Ferrazoli Camargo

It is necessary to emphasize in this part the process through which firms decide to participate in the mechanism. First, INEA/RJ presents developers with the three available options for executing the environmental compensation required by Law 9.985/00. These options are direct execution, execution by contracting third parties under its responsibility, or working through the FMA/RJ. The chosen alternative results in the developer and INEA/RJ formalizing the Environmental Compensation Pledge.

If the developer chooses to work through the FMA/RJ, besides formalizing the Pledge, developers need to sign a letter of intent that the Licensing Department of the INEA/RJ will provide for SEA/RJ and Funbio. Developers will make the deposits, under the conditions established in this Pledge, in a specific bank account indicated by Funbio (for each business there is an exclusive bank account). Beneficiaries may access these resources through projects that they have to elaborate and present for approval by the Chamber for Environmental Compensation of Rio de Janeiro (CCA/RJ), in accordance with the procedures set forth in the SEA/RJ resolutions. SEA/RJ will deliver these projects to Funbio, which will establish a direct link with the beneficiaries to implement the agreement.

This innovative option for executing environmental compensation through the FMA/RJ has different advantages from both a public and private point of view, which are described in the following table:

Advantages from the Public point of view:	Private point of view:
• The mechanism is designed to allow short, medium and long term investments in conservation units, providing effectiveness. • Improved quantity and quality of conservation units, economies of scale. • Support to implementing conservation units, e.g. expediting the process of legalizing land tenure. • Public governance and private execution allows transparent and agile management of funds while preserving the public role of decisions. • FMA/RJ is cheaper than other tested models. Considering the amount mobilized, Funbio's execution costs are lower than the interests earned in the investments. • Flexible mechanism, open to receive other types of resources. • The mechanism can be reproduced in other states and countries.	• There is a voluntary option of execution. • Easy solution for the compensation obligation through an efficient mechanism. • Low risk execution of compensation resources. • No additional execution costs.

Source: Funbio's presentation on FMA/RJ

Considering that the eligible expenditures are restricted and established by the law, which not only lists eligible items but also prioritizes them, directors of the conservation units served by the FMA/RJ have manifested that with the mechanism it has been possible to support areas less prioritized by public resources. For example, two of the first items to finance with compensation resources are management plans and land tenure regularization, so the FMA/RJ meets these requirements previously identified in the state system of protected areas. Another innovation provided by Funbio, also inspired by its experience with the ARPA program, is the issuance of a pre-paid debit card to make the day-to-day operation of the conservation units easier. The implementation of the assigned debit card is considered a great advantage by the conservation unit directors. This tool allows the director of every conservation unit to use the FMA/RJ resources for small expenses (gasoline, meetings snacks, bottled water, equipment maintenance, etc.), avoiding bureaucratic paperwork with the INEA[48]. As of December 2013, the FMA/RJ has provided about 300 thousand dollars through the debit cards.

5.3. FMA/RJ Governance

The governance structure of the mechanism was designed to allow public decision making and private execution, without conflict of interests. The SEA/RJ is in charge of coordinating the operation, while the Chamber of Environmental Compensation (CCA/RJ), located within SEA/RJ, is responsible for approving and directing funds to conservation units and projects. CCA/RJ is a multi-stakeholder committee, allowing for private sector and civil society representatives to take part in the decision making process.

The INEA/RJ, is one of the beneficiaries of the resources from environmental compensations deposited in the FMA/RJ. Other beneficiaries are ICMBio (the federal parks agency) when a federal area within the state is benefited, and the municipal environmental agencies that manage municipal conservation units.

The FMA/RJ manager, currently Funbio, is in charge of the technical and financial monitoring of projects approved by the CCA/RJ, providing procurement services (purchases and contracts), financial resource management (includes proposing and implementing an assets management policy), coordinating with environmental bodies, presenting physical-financial monitoring and accountability reports, and developing / implementing a computer system for project implementation, follow-up and accountability. Transparency is fundamental for the social control over the use of the compensation resources.

[48] Ricardo Wagner, Director of the conservation unit Serra da Concordia.

> **“Transparency is fundamental for the social control over the use of the compensation resources”**

5.4. The Future of FMA/RJ

As previously mentioned, the FMA/RJ model is being adapted to be replicated in other Brazilian states. Most states, and also the federal government, have compensation resources that could be funding protected areas but that are not being used due to the several operational bottlenecks to execute them. Therefore, a mechanism such as the FMA/RJ is necessary to mobilize those resources as done in Rio de Janeiro. However, such types of mechanisms still need more time to become a widespread funding source. As compensation is a legal obligation of the firms, imposed by law to help finance a public good (protected areas), there are different understandings about how it should be operated and by whom. The Union Court of Auditors has understood, in its decision nº2650/2009, that the legal nature of environmental compensation is to support protected areas and that there is no legal obligation for the entrepreneur to only transfer funds to a public agency. Funbio has been successful in using these resources and several prosecutors from different states have been asking Funbio to design mechanisms inspired by the FMA/RJ, not only to use compensation resources but also resources coming from other types of obligations (such as licensing process conditions, fines, penalties, etc.). On the other hand, one prosecutor from the Public Ministry of the State of Rio de Janeiro is legally questioning Funbio and the State of Rio de Janeiro with the argument of illegitimate use of public funds. His understanding is that compensation resources should be considered as budgetary resources and should be executed by following the rules for public resources (in Brazil the law for the execution of public resources is Law 8666/1993, which specifically regulates bidding and contracting by public institutions).

During the course of this judicial action, the state of Rio de Janeiro congress approved the state law – Law 6572/2013 – that formally establishes the FMA/RJ and the way it is operated. The enactment of Law 6572/2013, together with the previous opinion of the State General Attorney, should help clarify the use of compensation resources and this process may contribute to the protection and consolidation of the FMA/RJ which is a financial mechanism that has improved the funds' flow from business to conservation of protected areas in Brazil.