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SUBTROPICS

SOCIO-LEGAL ASSESSMENT OF THE ESTABLISHMENT OF NATURAL HERITAGE PRIVATE
RESERVES (RPPNS) IN SEVEN MUNICIPALITIES OF RIO DE JANEIRO STATE, BRAZIL.

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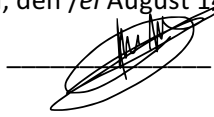
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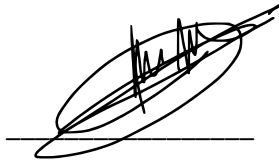
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Abstract

In 2000, with the promulgation of Conservation Units National System (SNUC) Law 9.985, the Natural Heritage Private Reserves (RPPN) became part of the SNUC conservation strategy as a conservation unit (UC), created inside the sustainable use group. RPPNs can be created as a federal, state or municipal unit of conservation. Some of the municipalities of Rio de Janeiro have established the strategy to create a law that outline the purpose and the procedures necessary to achieve the objective of nature conservation through the RPPNs. The law support the municipalities to enlarge the percentage of protected forest and increase the Green ICMS tax collected by the municipalities. The main objective of this research was to promote municipal secretaries of environment to improve their strategies for RPPN establishment in the municipalities of the state of Rio de Janeiro. The specific objectives were to compare the strategies of the environmental secretaries and councils in seven municipalities of the state of Rio de Janeiro and to develop a guideline for the municipalities to promote the creation of a municipal RPPN law based on the experience of the municipalities of Porciuncula and Varre Sai with RPPNs. The methods used were the comparison of municipal RPPN laws in seven municipalities of Rio de Janeiro, a semi-structured survey of RPPN owners in the municipalities of Varre Sai and Porciuncula, a structured online survey to all RPPN owners in the state of Rio de Janeiro state, a structured online perception survey to environmental decision makers in all the municipalities of Rio de Janeiro state, structure survey to experts in the subject in Rio de Janeiro State, documented analysis of private conservation strategies in Latin-America and the development of a guideline to promote the establishment of municipal RPPNs. The resulting comparisons of the municipal laws, and the perception surveys of the stake holders about their perception on at state level, framed the guideline and recommendations for municipalities in order to give a complete overview to decision makers to establish municipal RPPNs.

Keywords: Atlantic Forest, Atlantic Forest Law, Comparative law, Forest Law, Guideline, Natural Heritage Private Reserves (RPPN) Rio de Janeiro state, SNUC, Socio-legal.

Resumo

Em 2000, com a promulgação da Lei 9.985 do Sistema Nacional de Unidades de Conservação (SNUC), as Reservas Privadas de Patrimônio Natural (RPPN), se tornaram parte da estratégia de conservação SNUC como unidade de conservação (UC), criada dentro do grupo de uso sustentável. As RPPNs podem ser criadas como uma unidade de conservação federal, estadual ou municipal. Alguns dos municípios do Rio de Janeiro estabeleceram a estratégia para criar uma lei que descreva o objetivo e os procedimentos necessários para assistir o objetivo da conservação da natureza através das RPPNs. A lei apoia os municípios para aumentar a porcentagem de floresta protegida e aumentar o imposto ICMS verde coletado pelos municípios. O principal objetivo desta pesquisa foi promover secretarias municipais de meio ambiente para melhorar suas estratégias de implantação de RPPN nos municípios do estado do Rio de Janeiro. Os objetivos específicos foram comparar as estratégias dos secretários e conselhos ambientais em sete municípios do estado do Rio de Janeiro e desenvolver uma diretriz para os municípios promover a criação de uma lei municipal RPPN baseada na experiência dos municípios de Porciúncula e Varre Sai com RPPNs. Os métodos utilizados foram a comparação das leis municipais de RPPN em sete municípios do Rio de Janeiro, uma pesquisa semiestruturada de proprietários de RPPN nos municípios de Varre Sai e Porciúncula, uma pesquisa on-line estruturada para todos os proprietários da RPPN no estado do Rio de Janeiro Estado, uma pesquisa estruturada de percepção on-line para tomadores de decisões ambientais em todos os municípios do estado do Rio de Janeiro, uma pesquisa estruturada para especialistas no assunto no estado do Rio de Janeiro, um análise documentado de estratégias de conservação privadas na América Latina, e desenvolvimento de uma diretriz para promover o estabelecimento de RPPNs municipais. As comparações resultantes das leis municipais e os inquéritos de percepção das partes interessadas sobre a sua percepção a nível estadual, enquadram a diretriz e as recomendações para os municípios, a fim de dar uma visão geral completa aos tomadores de decisão para estabelecer RPPNs municipais.

Palavras-chave: Mata Atlântica, Lei da Mata Atlântica, Direito Comparado, Direito Florestal, Diretriz, Reservas Particular do Patrimônio Natural (RPPN) Estado do Rio de Janeiro, SNUC, Socio-legal.

Table of content

1 INTRODUCTION	1
1.1 THE ATLANTIC FOREST	2
1.2 BRAZILIAN LAW AND ITS HIERARCHY	3
1.3 LEGAL FRAMEWORK	4
1.3.1 FEDERAL CONSTITUTION OF BRAZIL	4
1.3.2 ATLANTIC FOREST LAW	5
1.3.3 FOREST CODE	5
1.3.4 CONSERVATION UNITS NATIONAL SYSTEM (SNUC, ACRONYM IN PORTUGUESE)	6
1.3.5 STATE CONSTITUTION OF RIO DE JANEIRO	7
1.3.6 MUNICIPAL ORGANIC LAW	8
1.3.7 THE MUNICIPAL LEGISLATIVE PROCESS AND THE DECREE.	8
1.3.8 FEDERAL INSTITUTIONS	9
1.3.9 STATE OF RIO DE JANEIRO INSTITUTIONS	10
1.3.10 MUNICIPAL INSTITUTIONS	10
1.3.11 RIO DE JANEIRO TECHNICAL ASSISTANCE AND EXTENSION COMPANY (EMATER RIO)	11
1.4 THE NATURAL HERITAGE PRIVATE RESERVE (RPPN)	11
1.4.1 PROCESS OF CREATION OF THE RPPN	13
1.4.2 THE NATURAL PATRIMONY ASSOCIATION (APN/RJ)	14
1.4.3 SOS MATA ATLÁNTICA	14
1.5 THE TAX ON OPERATION RELATED TO THE CIRCULATION OF GOODS AND INTERSTATE AND INTER MUNICIPAL TRANSPORT SERVICES AND COMMUNICATIONS (ICMS)	15
1.5.1 GREEN ICMS (THE ICMS-VERDE)	16
1.6 ENVIRONMENTAL COMPENSATION CAMERA FUND (ECCF)	17
2 PROBLEM STATEMENT	18
2.1 PROPERTY LAW AND ITS MISMATCH WITH THE PUBLIC AND PARTICULAR INTEREST IN RPPN	18
2.2 LEGAL HISTORY OF PRIVATE PROPERTY IN BRAZIL	19
2.3 MAIN OBJECTIVE	20
2.4 RESEARCH QUESTIONS	20
3 STUDY AREA	22
3.1 STATE OF RIO DE JANEIRO	22
3.2 SEVEN MUNICIPALITIES	23
4 METHODOLOGY	25
4.1 COMPARISON OF THE LAW	26
4.2 PERCEPTION SURVEY FOR THE RPPN OWNERS IN VARRE SAI AND PORCIUNCULA	27
4.3 PERCEPTION SURVEY FOR THE RPPN OWNERS IN THE STATE	28
4.4 PERCEPTION SURVEY FOR THE STATE MUNICIPAL ENVIRONMENT DECISION MAKERS	29
4.5 EXPERTS SURVEY RELATED TO RPPNS IN THE STATE	29
4.6 COMPARISON WITH THE MEXICAN EXPERIENCE	30

4.7 DEVELOPMENT OF A GUIDELINE	30
5 RESULTS	32
5.1 COMPARISON OF THE LAWS	32
5.1.1 THE RPPN MUNICIPAL LAW MAIN COMPONENTS	32
5.1.2 SCHEME OF COMPARISON OF ALL THE MUNICIPAL RPPNS LAWS AND DECREES	36
5.1.3 MAIN DIFFERENCES IN THE COMPARISON OF THE LAWS	40
5.2 THE LAW 572/2010 FROM THE MUNICIPALITY OF VARRE SAI	41
5.3 RPPN OWNERS' PERCEPTION IN VARRE SAI AND PORCIUNCULA	43
5.3.1 MOTIVATION TO CREATE RPPNS	44
5.3.2 REGISTRATION IN THE RURAL ENVIRONMENTAL REGISTRY	45
5.3.3 TIME WITH A RPPN AND MANAGEMENT PLAN	45
5.3.4 PERCEPTION DURING THE PROCESS OF CREATION	46
5.3.5 PERCEPTION OF THE MUNICIPAL ADMINISTRATION	49
5.3.6 PERCEPTION OF APN/RJ	50
5.3.7 PERCEPTION OF THE COMMUNITY AROUND RPPNS	50
5.3.8 KNOWLEDGE OF THE LEGAL PROCESS AND LEGAL PROBLEMS	50
5.4 OWNERS' PERCEPTION IN THE WHOLE STATE (INTERNET SURVEY)	51
5.5 MUNICIPAL ENVIRONMENTAL DECISION MAKERS' PERCEPTION	56
5.6 EXPERTS SURVEY	59
5.7 DOCUMENTED ANALYSIS FROM MEXICAN PROPOSAL OF PRIVATE PROTECTED AREAS	61
6 DISCUSSION	64
6.1 DIFFICULTIES DURING THE RESEARCH	64
6.2 METHOD DISCUSSION	65
6.3 COMPARISON OF THE LAW	65
6.3.1 THE LAW 572/2010	66
6.4 GREEN ICMS: PROBLEM OR SOLUTION	67
6.5 OWNERS INSTITUTIONAL PERCEPTION OF THE LAW	68
6.6 STATE OR MUNICIPAL RPPN: EXPENSES AND CONSERVATION	69
6.7 INTRA AND INTER INSTITUTIONAL NETWORKING	70
6.8 ECONOMIC AND POLITICAL CRISIS IN THE STATE AND FINANCIAL FUNDING	70
6.9 EXPERIENCES FROM PRIVATE PROTECTED AREAS IN MEXICO	71
7 GUIDELINE OF THE LAW	73
8 REFERENCES	81
9 ANNEXES	88
8.1 QUESTIONNAIRE FOR RPPN OWNERS	88
8.2 SURVEY ENVIRONMENTAL LEADERS PERCEPTION	95
8.3 SURVEY FOR RPPN OWNERS PERCEPTION	97

List of Figures

Figure 1 Brazilian Power of the State	3
Figure 2 Brazilian's Law Hierarchy	4
Figure 3 SNUC Conservation Units from Buendia Sabbagh 2011	7
Figure 4 Nova Friburgo's city council room.	9
Figure 5 Institutional Framework from Guzman, 2016	10
Figure 6 Evolution of RPPN's Legislation	13
Figure 7 ICMS Tax in Brazil, (E.g., tax in medicines for 2017 from simtax 2017).....	16
Figure 8 Municipal Green ICMS.....	17
Figure 9 Remains of Atlantic Forest in the State of Rio de Janeiro from SOS Mata Atlántica 2017	23
Figure 10 State of Rio de Janeiro, municipalities analyzed.....	24
Figure 11 Location and Hierarchy of the laws analyzed.....	26
Figure 12 Topics for the owners perception Survey.....	27
Figure 13 Topics perception survey for owner from all the municipalities of Rio de Janeiro state.....	28
Figure 14 Topics for the perception survey for the state municipal environment decision makers.....	29
Figure 15 Themes applied for the experts survey.....	30
Figure 16 Comparison of all the Municipalities RPPN law. *	36
Figure 17 Location of RPPNs in Varre Sai from Guzman, 2016.....	43
Figure 18 Location of RPPNs in Porciuncula from Guzman 2016	44
Figure 19 Motives to create RPPNs	44
Figure 20 CAR's registration category	45
Figure 21 RPPNs registered in the CAR.....	45
Figure 22 Years since the creation of the RPPN.....	46
Figure 23 Percentage of RPPNs with management plan.....	46
Figure 24 Time used in the process of establishment.....	46
Figure 25 Time of documents analysis	47
Figure 26 Specialist who worked on the establishment process	47
Figure 27 Incentive for the creation of RPPNs	48
Figure 28 Difficulties during the creation process	49
Figure 29 Owners perception about government capacity to create RPPNs.....	49
Figure 30 Perception of APN/RJ, does APN/RJ has enough personal trained.....	50
Figure 31 Gender of the owners	51
Figure 32 Age of the owners	51
Figure 33 Establishment places of RPPNs.....	52
Figure 34 RPPNs protected under the law.....	52
Figure 35 Time used to establish RPPNs.....	53
Figure 36 Percentage of owners registered in the CAR	53
Figure 37 CAR's registration category	53
Figure 38 Motive to create RPPNs.....	54
Figure 39 Difficulties to establish RPPNs	55
Figure 40 Gender of the decision makers	56
Figure 41 Age of the decision makers.....	56
Figure 42 Discussion of the RPPN law in the municipal council.....	57
Figure 43 Knowledge of municipal law existence.....	57
Figure 44 Knowledge of Green ICMS.....	58
Figure 45 Knowledge of the RPPN benefits	58
Figure 46 Municipal Infraestructure and staff.....	58
Figure 47 Orientation to create RPPNs.....	58

List of acronyms

(AVDC)	Areas Voluntarily Destined for Conservation
(APA)	Environmental Protection Areas
(APN/RJ)	Natural Patrimony Association
(APP)	Areas of Permanent Preservation
(ARIE)	Areas of Relevant Ecological Interest
(CECA)	State Commission for the Environmental Control (CECA)
(CONAMA)	National Council for the Environment
(CONAMP)	National Commission for Natural Protected Areas
(CONEMA)	State Council on the Environment
(DM)	Decision makers
(ECCF)	Environmental Compensation Camera
(EE)	Ecological Stations
(EMATER)	Rio de Janeiro Technical Assistance and Extension Company
(FN)	National Forests
(FNMA)	National Environment Fund
(IBAMA)	Brazilian Institute for the Environmental and Natural Renewable Resources
(ICMS)	Tax on operation related to the circulation of goods and Interstate and Inter municipal transport services and communications
(INEA)	State Environmental Institution
(IPTU)	Urban Land and Territorial Property
(ITR)	Rural Territorial Property
(IUCN)	International Union for Conservation of Nature
(LR)	Legal Reserves
(MMA)	Ministry of Environment
(MN)	Natural Monuments
(PN)	National Parks
(RB)	Biological Reserves
(RDS)	Development Reserves

(RESEX)	Extractive Reserves
(RF)	Wildlife Reserves
(RPPN)	Natural Heritage Private Reserves
(RVS)	Wildlife refuges
(SEA)	State Secretary for the Environment
(SISNAM)	National System for Environment
(SMA)	Municipal Secretary of Environment
(SNUC)	Conservation Units National System
(UC)	Units of Conservation
(UCPI)	Integral Protected Units
(VAT)	Value-added tax

1 Introduction



Vargas' family RPPN in the municipality of Varre Sai

1.1 The Atlantic Forest

The Atlantic Forest (Mata Atlântica, in Portuguese) is one of the largest rainforests of the American continent, across zones of Uruguay, Argentina and Brazil, initially covering around 150 million ha (Câmara, 2003, Ribeiro et al., 2009). The Atlantic Forest is registered as the oldest evolutive Brazilian forest (Rizzini, 1997); because it is a mixture of species that evolved in the era that South America was separating from Africa, 65 million years ago (Colombo and Joly, 2010). Extending into subtropical regions, its average latitude is around 29° South, and its average longitude is 47° West. It subsists near to the coast, receives large amounts of rain during the year, its annual average being 1500 mm (Camara,2003). The fauna includes 13.1 % of the world's total species (da Silva and Casteleti, 2003), turning it into one of the worlds' 25 biodiversity "hotspots" named by International Conservation (Fonseca et al., 2004). Estimates say than more than 40 % of the vertebrates and plant species from the forest are endemic (Pinto et al., 2004). Slightly more than 2,200 vertebrates' species are known to the area, of which 940 are endemic (Pinto et al, 2004). From the approximately 15,700 species of plants that are found in the biome, 7,155 are endemics (Stehman et al., 2009). In Brazil, the biome area covers about 15 % of the national territory, approximately 1,300.000 km². Nevertheless, during the last 500 years, the change in the land's uses and cover has taken to an over exploitation and destruction of the Atlantic Forest. Much of its forest has been replaced by cities as: Belo Horizonte, Curitiba, Porto Alegre, Recife, Rio de Janeiro, São Paulo, and Salvador, becoming the homeland of more than 124 million Brazilians, were 70 % of the Brazilian BIP is produced (Colombo and Joly, 2010). To this day, the forest's biodiversity is being severely threatened to the point of extinction (Parker et al., 1996; Stotz et al.,1996; Goerck, 1997, Raedig et al., 2010). The forest remains' original cover estimations are between 11 % and 16 % (Ribeiro et al., 2009), and more than 80 % of these remains are in the hands of private owners. Because of the biome's importance, and its endangered species, the Brazilian Atlantic Forest, reached the recognition as Biosphere Reserve, giving it the international protection through the UNESCO Intergovernmental program "The Man and the Biosphere (MaB)" in 1991

(INEA,2017). The coverage of protected areas in the Atlantic Forest has improved in the last two years, with the federal, state and municipal governs assistance, through the implementation of units of conservation; nonetheless, there is native vegetation that remains without protection.

1.2 Brazilian Law and its Hierarchy

The Roman Law is the origin of Brazilian's Civil Law implemented by the Portuguese during the colonization; based on codes and legislation. Since October 5th, 1988 with the implementation of the Brazilian Federal Constitution, Brazil, became a Federative Republic formed by its states, municipalities and a Federal District. The system is enacted by the federal legislative, executive and judicial power, and also by the state and municipal legislative, executive and judicial authority. The supreme law of the country is the federal constitution; according to the organic fragment, the 26 federal states have the power to adopt their own constitutions and laws; however, their autonomy is limited; municipalities also enjoy restricted autonomy since they belong to a state constitution (OAS, 2017, Constituição Da República Federativa Do Brasil, 1988) (Figure 1).

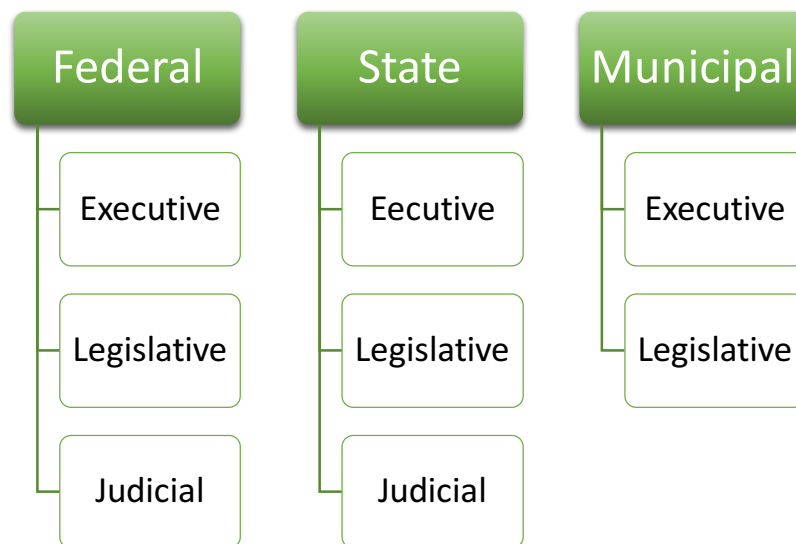


Figure 1 Brazilian Power of the State

The hierarchy of Brazilian law is derived from the following: 1.- Federal Constitution with the original text and its amendments, international treaties (only the ones that rules the human rights), 2.- Complimentary laws, 3.- Ordinary laws, 4.- Delegated laws, 5.- Decrees, 6.- Resolutions, 7.- Probationary measures, 8.- Regular decrees and 9.- Individual rules (contracts, judgments)(Clegg, et al., 2016) (Figure 2).

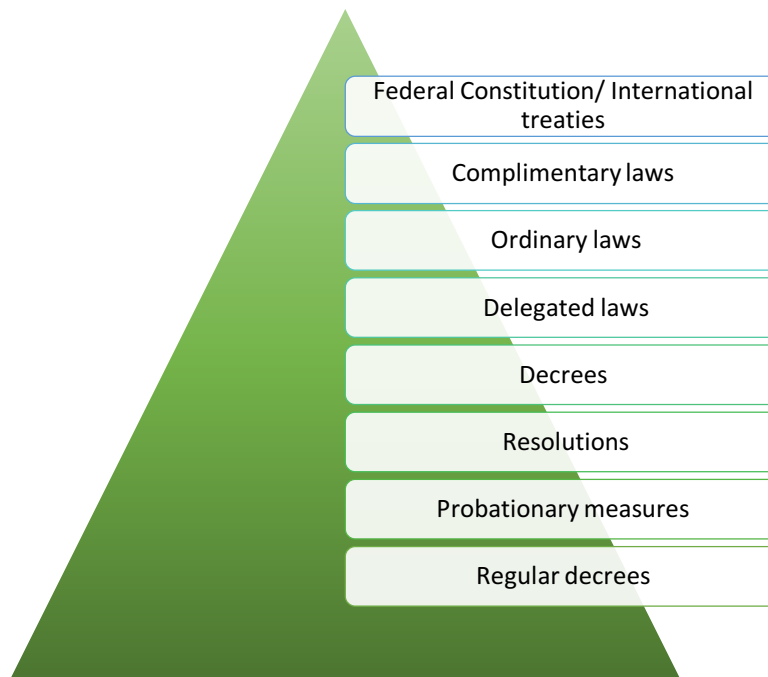


Figure 2 Brazilian's Law Hierarchy

1.3 Legal Framework

1.3.1 Federal Constitution of Brazil

The 1988 Brazilian Federal Constitution from, (also known as the *Green Constitution* due to the international recognition for granting the importance to conservation and management of the environment and being one of the more actual and current constitutions in the world), acknowledged in the Article 225 that environment is a public good and that everyone has the right to have an ecologically balanced environment. Section 4 also defines the Atlantic Forest as national patrimony, and thus on December 22, 2006 established the federal law nº 11.428, from known as

the “Atlantic Forest Law” and its regulation by the federal decree nº 6.660 (see 1.3.7), from November 21 of 2008. (Oliveira and Superti, 2009).

1.3.2 Atlantic Forest Law

Article 6 of the Atlantic Forest Law pronounces:

“The protection and use of the Atlantic Forest Biome are generally aimed at sustainable development and, for specific purposes, the safeguarding of biodiversity, human health, landscape, aesthetic and tourism values, water regime and social stability.”

(Atlantic Forest Law, 2006)

Its aim is the maintenance and recovery of the biodiversity, vegetation, fauna and water regime of the Atlantic Forest biome for present and future generations; the stimulation of research, dissemination of technologies for sustainable management of vegetation and the formation of a public awareness about the need for recovery and preservation of ecosystems. As well as the promotion of public and private activities that are compatible with the maintenance of the ecological balance and the disciplining of rural and urban occupation in order to harmonize economic growth with the maintenance of ecological equilibrium.

1.3.3 Forest Code

Created in 1965, the Forest Code has been transformed over the years, in 1990 it was changed into a *de facto* environmental law via presidential decrees (see 1.3.7). As of 2001, the Forest Code obliges landowners to conserve native vegetation in their rural properties, setting the Legal Reserves (LR), it also designated sensitive areas as Areas of Permanent Preservation (APP) (Soares-filho et al., 2014). Brazil's new Forest Code, law 12.651, has been applied since 2012; relevant regulations were also approved in 2014, additional regulations and others are still under development. The code hosts new instruments that allow better monitoring of land use which ensures the environmental compliance, and combats deforestation, as well as attaining the goals of reduction of greenhouse emissions (Machado, 2016).

Nevertheless, World Wild Foundation (2017) says there are still a lot of legal gaps in the code that have allowed the deforestation in new forest areas.

1.3.4 Conservation Units National System (SNUC, acronym in Portuguese)

In 1978, the International Union for Conservation of Nature (IUCN) proposed an international management system of protected areas with ten categories, which was replaced by a definitive system in 1994, with six categories; the first one has the greatest use restriction and the last one the lowest limitation: 1. Strict natural reserve or primitive area; 2. National park; 3. Natural monument; 4. Area of habitat management or species management 5. Terrestrial or marine protected landscape; 6. Protected area with managed resources (Benjamin, 2001).

Following the steps of the IUCN, in Brazil, the Conservation Units National System (SNUC) was created in Brazil in 2000 by the Federal law 9.985/2000. it defined the Conservation Unit as the "territorial space and natural resources, including jurisdictional water, with relevant environmental characteristics, legally instituted by the Public Power, having the objectives of conservation in defining limits, with a particular regimen of administration, which is subject to protection adequate guarantees" (Lei Federal nº. 9.985, 2000).

By the creation of the SNUC, the Units of Conservation (UC) changed their form of creation, objectives, goals, attributions and methods of implementation. The UC integrated by the SNUC is divided in two; Integral Protected Units (UCPI) which allowed the indirect use of the natural resources: Ecological Stations (EE), Biological Reserves (RB), National Parks (PN), Natural Monuments (MN) and Wildlife refuges (RVS); and the units of the Sustainable Use Group are: Environmental Protection Areas (APA), Areas of Relevant Ecological Interest (ARIE), National Forests (FN), Extractive Reserves (RESEX), Wildlife Reserves (RF), Development Reserves (RDS) and Natural Heritage Private Reserves (RPPN) (MMA, 2017) (Figure 3).

Figure 3 SNUC Conservation Units from Buendia Sabbagh 2011

Integral Protection Units	Sustainable Use Group
<p>It allows the indirect use of its natural resources so that it does not involve consumption, collection, damage or destruction of the environment, such as research, environmental education and, in some cases, public visitation</p>	<p>It allows the exploitation of the environment in a way that ensures the sustainability of renewable environmental resources and ecological processes, while maintaining biodiversity and ecological attributes, in a socially just and economically viable way.</p>
<ul style="list-style-type: none"> • Ecological Stations (EE), • Biological Reserves (RB), • National Parks (PN), • Natural Monuments (MN) and • Wildlife Refuges (RVS). 	<ul style="list-style-type: none"> • Environmental Protection Areas (APA), • Areas of Relevant Ecological Interest (ARIE), • National Forests (FN), • Extractive Reserves (RESEX), • Wildlife Reserves (RF), • Development Reserves (RDS) and, • Natural Heritage Private Reserves (RPPN Acronym in Portuguese)

(The bold words are from the author in RPPN)

1.3.5 State Constitution of Rio de Janeiro

According to the state constitution of Rio de Janeiro, its values are: 1. the sovereignty of the nation and its people; 2. the dignity of the human person; 3. the social values of work and free enterprise; 4. political pluralism. The state of Rio de Janeiro and its municipalities, as well as the other entities of the federation, are autonomous. The state has the capacity for self-organization and self-legislation (creation and edition

of its laws). Article 73 says that: it is the competence of the state, in common with the union and the municipalities, to protect the environment and combat pollution in any of its forms; Article 74 mentions that it is incumbent upon the state, concurrently with the union, to legislate on: forests, hunting, fishing, wildlife, nature conservation, soil and natural resources protection, the protection of the environment and pollution control; as well as protection of historical, cultural, artistic, tourism and landscape patrimony (Constituição da República Federativa do Brasil, 1988).

1.3.6 Municipal Organic Law

The primary law at municipal level is the municipalities' organic law; it is for the municipalities as the state constitutions is for the states or the federal constitution for the union. It organizes them. The organic law is voted on by in the city council and it must be approved by at least two-thirds of its members. It can be taken as a municipal constitution, for that reason, every law created by the municipality is also falls under the municipal organic law (Lenza, 2009).

1.3.7 The municipal legislative process and the decree.

One of the main aims of the legislative process is to create laws. The process of creation always starts from the hands of the mayor or the aldermen by presenting a bill to the city council (Figure 4). They are the only subject of competence of the executive or legislative power (da Cunha, 2008). After the presentation of the bill, the discussion phase begins, which aims to improve the project, and can amend the bill. The debates generally modify the initial proposal, adapting it to the wishes or reality of the society (Mendes et al., 2000). Following, the voting stage begins, it is at this point where the bill will be approved or rejected by the city council. Resulting, the sanction or the veto by the mayor: the first one is the approval of the bill by the executive, and it would be immediately transformed into law. The vetoing of the bill is the demonstration of dissatisfaction of the final version of the proposal, in two hypotheses: when the project is considered unconstitutional or when the project contrary the public interest (Meirelles, 2013). Then, derives the promulgation, act by

which the existence of the law is attested, changing the bill to a law promulgated with a sanction or overthrowing the mayor's veto by the city council. The municipal legislative process is finalized with the publication of the law.

The decree is simply an administrative act, it could be established by federal, state or municipal stage; it is a legislative deliberation of a political and administrative nature, can have external or tax effects for its recipients. It can be created by the legislative or executive power, and it does not have to be voted on (Meirelles, 2013).



Figure 4 Nova Friburgo's city council room.

1.3.8 Federal Institutions

The Ministry of Environment (MMA) is the federal institution in charge of the improvements of the environment and the sustainable use of resources based on the Law 10683 from 2003 (MMA,2017). The National System for Environment (SISNAM) is centralized through the MMA. This institution is in charge of the National Council for the Environment (CONAMA) and the Brazilian Institute for the Environmental and Natural Renewable Resources (IBAMA). It has the responsibility of maintaining an updated cadaster, conducting periodic inspections and providing technical support in the planning, protection, control and punishment of environmental crimes, and the Chico Mendes Institute for Biodiversity Conservation (ICMBio) (IBAMA, 2017, ICMBio, 2017) (Figure 5).

1.3.9 State of Rio de Janeiro Institutions

The State Secretary for the Environment (SEA) is the institution responsible for the environmental care and policy in the State of Rio de Janeiro. It is constituted by the State Commission for the Environmental Control (CECA), the State Council on the Environment (CONEMA), and the State Environmental Institution (INEA). The last is in charge of the enforcement of the law and management of RPPNs in the State since 2009 (INEA, 2017) (Figure 5).

1.3.10 Municipal Institutions

The Municipal Secretary of Environment (SMA) is responsible for the fight against environmental crime and the provision of environmental licenses. The Municipal Environmental Secretary is a legal local body for all activities of environmental management, and the Environmental Council is a consulted and deliberative institution (Ministério Público do Estado do Rio de Janeiro, 2017) (Figure 5).

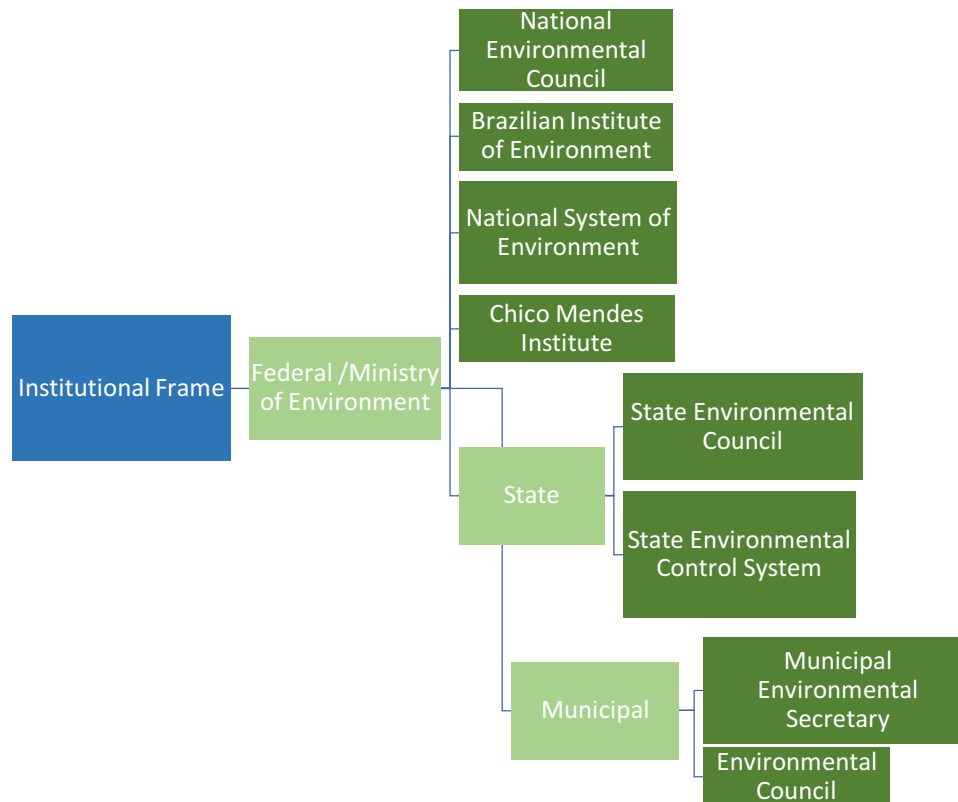


Figure 5 Institutional Framework from Guzman, 2016

1.3.11 Rio de Janeiro Technical Assistance and Extension Company (EMATER Rio)

Linked to the Secretary of Agriculture in Rio de Janeiro, the Rio de Janeiro Technical Assistance and Extension Company (EMATER Rio) works with small and medium farmers, helping as a link between the government and the rural producers. It collaborates with different bodies at the federal, state and municipal levels, formalizing and executing programs and projects of technical assistance and rural extension. It aims at the dissemination of technical, economic and social knowledge, to strive for the preservation of the environment, pointing at an ecological balance between humans, plants and animals, and providing rural producers with necessary services for agricultural production. They also propose and prepare plans and programs related to public works and sanitation and follow up the actions related to their execution (EMATER, 2017).

1.4 The Natural Heritage Private Reserve (RPPN)

In Brazil, since the promulgation of the Forestry Law in 1934, the “Protected Forests” or “Florestas Protetoras” (IBAMA,2017) were planned for the destinations of private protected areas, by the initiative of the rural owners. It was only in 2000, with the publication of Law 9.985, which establishes SNUC, that the RPPN achieved the status of units of conservation, making Brazil the only Latin American country to include private reserves in its official protected area system. Although, considered as units of "sustainable use" by the SNUC Law, the presidential veto to item III, Par. 2, Art. 21, places them "in fact" among the group of "integral protection" (Mesquita and Santos, 2002) (Figure 6).

The RPPN are privately owned areas with the objective of conservation for biological diversity, permitting the scientific research, touristic visitation, recreation and education, created by owner’s initiative, and supported by the members of the SNUC (MMA, 2017).

The RPPN is the only possible UC to be set up from a voluntary act, and in one single private property, endorsed by a notary in perpetuity or *ad Perpetua*. The landowner is assured some benefits, such as the property rights, tax exemption for Rural Territorial Property (ITR), and in some cases, Tax on Urban Land and Territorial Property (IPTU). They also have priority in the analysis of projects by the National Fund for the Environment, and they can request for concession of agricultural credit. Furthermore, the possibilities to cooperate with private and public entities in the protection, management, and supervision of the RPPN. However, article 7 of decree 1,922/1996, provides for the recognition of RPPNs. These are characterized as units of conservation for indirect use: "the RPPN will be granted by the competent public authorities, protection provided by the legislation in force to the use of conservation units indirectly, without prejudice to the right of ownership, which should be exercised by its owner, in defense of the reserve, under the guidance and with the support of the competent body". On SNUC (According to Law 9.985 / 00), indirect use is defined as "one that does not involve consumption, collection or destruction of natural resources" (Ficagna, 1990).

Currently, there are 1398 RPPN in Brazil, protecting 769,751.07 ha, In the state of Rio de Janeiro there are 150 RPPN protecting 12,730,13 ha in the Atlantic Forest (Confederação Nacional de RPPN, 2017).

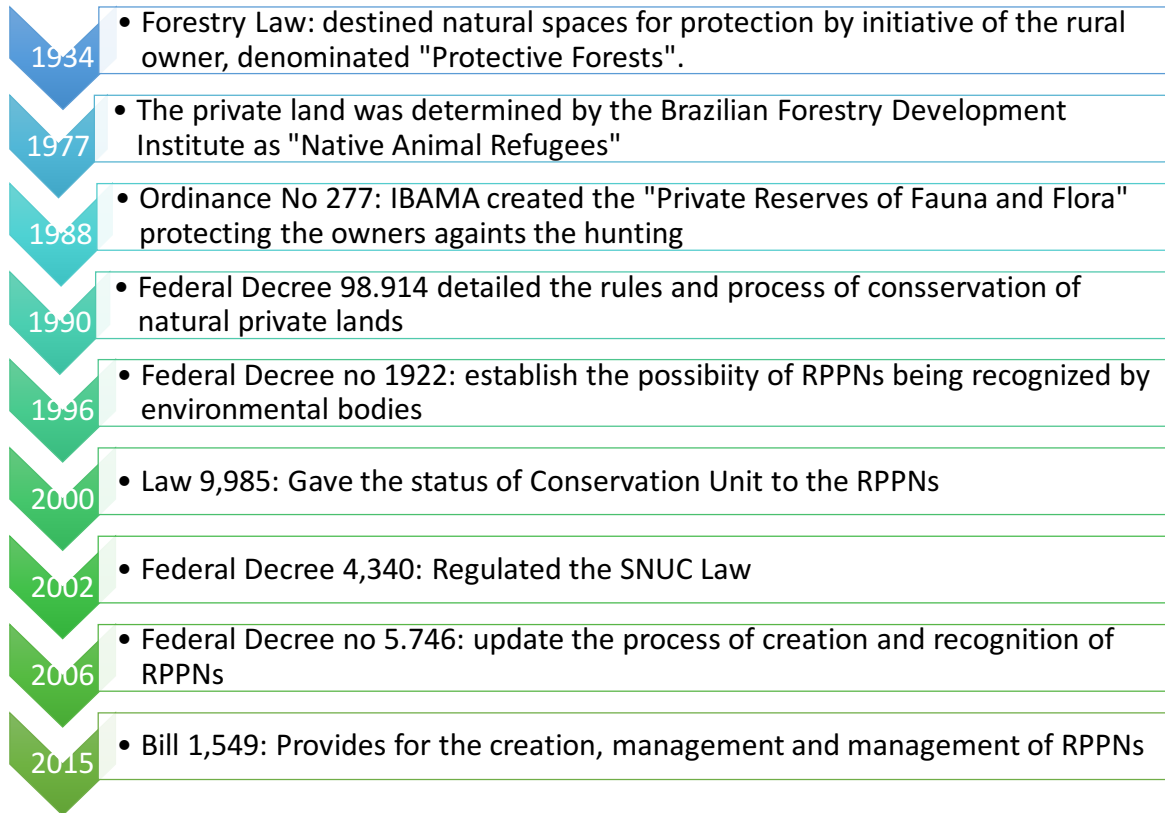


Figure 6 Evolution of RPPN's Legislation

1.4.1 Process of creation of the RPPN

There are three models to create an RPPN; through federal, the state or the municipal procedure. The two first are based on the federal law and in the state law respectively, and the process is almost the same. Nonetheless, the institutions responsible for the creation process are different and the different models can only be created by law as an integral protection unit. Furthermore, there is the federal bill "Dispõe sobre a criação, gestão e manejo de Reserva Particular do Patrimônio Natural - RPPN, e dá outras providências" (Postulates for the creation and management of Private Natural Heritage Reserve - RPPN, and provides other measures) number 1.548/2015, which in case it is voted and passed, it will become the federal guideline to create RPPNs (RPPN web, 2017).

The process of creation of a municipal RPPN is done through the Municipal Environmental Secretary. The Municipal RPPN can be created as a sustainable use or integral protection category. The process starts by petition from the owner, and the delivery of personal documentation to the environment secretary, the documentation then undergoes a legal and technical analysis. The next step is made by the environmental institution that makes an inspection of the area, to see if the area is in the public environmental interest, (e.g., have endemic flora or fauna). After that, if the opinion is favorable, the approval of the RPPN body occurs and the legal recognition is published in the Official Gazette, then, the owner will then have then 60 days to register with the Registry Office of Property as RPPN (Lei Federal nº. 9.985, 2000).

The main benefits for rural landowners are: the exemption of the Rural Territorial Tax (ITR) from the created area, priority in the analysis of the concession of agricultural credits by official banks, and granting of funds from the National Environment Fund (FNMA) and the Ministry of Environment (MMA). Some environmental organizations have programs to support RPPN that donate resources to owners who wish to implement or manage an RPPN (Mendo et al., 2006).

1.4.2 The Natural Patrimony Association (APN/RJ)

The Natural Patrimony Association (APN/RJ), is an association of RPPN owners and legal reserves from Rio de Janeiro State, serves as a non-profit social organization that seeks to strengthen the idea of preservation with rural landowners and to spread awareness of environmental issues to society in general. The Natural Patrimony association was created in 1997 as a necessity of the RPPN owners, in order to endorse their rights. Since then, the Association has supported the creation and management of more RPPN in the whole state (Moraes, 2017).

1.4.3 SOS Mata Atlântica

SOS Mata Atlântica in partnership with Conservation International conducted a program to support the RPPN of the Atlantic Forest. For 12 years, the program has

provided directly to the owner or to some organization interested in creating RPPN or assisting in the management of already created reserves donations of financial resources. During these 12 years, the program supported the creation of more than 300 RPPN. As a matter of financial resources, the last projects supported through public bidding were in 2012. Starting in 2015, a new agenda of support for the municipal UCs that have worked with the production of knowledge about these conservation units was launched in 2016, a call for proposal that was able to support 24 projects of creation and management of units of conservation formed in the municipal base. Of these four projects, were for RPPN created in municipalities in different states, that have own legislation for recognition of RPPN and the other projects to support the creation and management of public conservation units (Fonseca,2017)

1.5 The tax on operation related to the circulation of goods and interstate and Inter Municipal Transport Services and Communications (ICMS)

The tax on operation related to the circulation of goods and Interstate and Inter Municipal Transport Services and Communications, (ICMS), is a tax value added of sale and service, and applies to movement of goods, transportation, and services of communication. The ICMS was created by the Federal Constitution of 1988, becoming a national tax system and entered into vigor on March 1, 1989. The Merchandise and services circulate within the ICMS. Every state conveys its own tax, ranging, from 7 % to 25 %, depending on the products, becoming one of the most significant taxes in the country. There are some states in which this tax is the largest source of financial resources (Rezende, 2013) (Figure 7).



Figure 7 ICMS Tax in Brazil, (E.g., tax in medicines for 2017 from simtax 2017)

1.5.1 Green ICMS (The ICMS-Verde)

With the aim of collection, the Ecological ICMS (or Green ICMS) has been a way to encourage municipalities to create more preservation areas and to improve the quality of the already protected areas (Pinto et al., 2017). It was created as a way to “compensate municipalities” for the restriction of land use in protected areas, since some economic activities are restricted or even prohibited in order to ensure its preservation (Pinto et al., 2017). The main benefit for municipalities with RPPN is the receipt of ecological ICMS, and the Ecological ICMS is a share of the ICMS tax revenue that, by law, must be passed on to the municipalities to be used in activities related to environmental conservation (Mendo et al., 2006). In every state, the regular ICMS is collected and divided. The state manages 75 % and the other 25 % is transferred to the municipalities. Once inside the municipalities, it is once again divided; 75 % can be used in proportion to the value-added tax (VAT) and the 25 % can be used for environmental protection purposes (Faria, 2015). From that last 25 %, the Green ICMS is composed of the following criteria: 45 % for conservation units, 30 % for water quality, and 25 % for solid waste management (INEA, 2017) (Figure 8). In 2014, the state of Rio de Janeiro, distributed 195 million Reais by the concept

of Green ICMS to the municipalities, from that amount 17 million Reais, were allocated to the specific municipal UC criteria (Pinto et al., 2017).

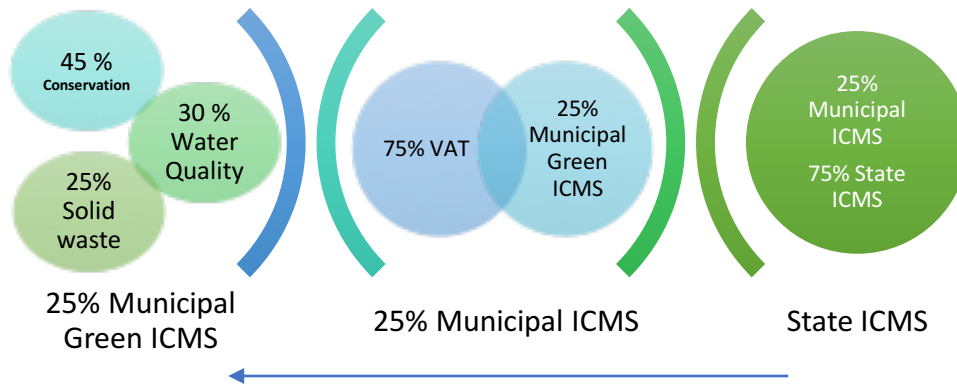


Figure 8 Municipal Green ICMS

1.6 Environmental Compensation Camera Fund (ECCF)

The Fund of the Environmental Compensation Camera, established in 2006, is a fund created by the federal government in every state, to support local environmental policies, the sources of the fund are private companies that pays the government for environmental penalties, and the resources are invested in the creation and management of conservation units (UCs); the fund is managed by a IBAMA and the Federal Economic Fund. (Guagliardi, 2017, Unidades de Conservação, 2017).

2 Problem statement

It has been shown that lack of information, economic resources, documents on a process of legalization and a long process of creation due bureaucracy are the problems for the owners in order to create more RPPN at the municipal level (Guzman, 2016).

Currently, the UC has not been an environmental planning priority for the government. The RPPN are similarly affected by the social and political conflicts and difficulties as a reflection of the national crisis. The incentive models as the Green ICMS are distant from the national reality; the models do not promote social participation and cultural diversity protection, and they do not follow the recommended principles to achieve conservation of the International Union of Conservation Nature (IUNC) (Morsello, 2001). The municipal RPPN displayed a weak legal process that contributed to the non-development of further areas (Guzman, 2016).

2.1 Property law and its mismatch with the public and particular interest in RPPN

Another important aspect of the performance of the system and consequently, the evaluation of the natural environment, is the establishment of property rights. Property rights assign individuals or organizations the right to control access to certain assets, including the right to charge for their use (da Motta, 1998).

The 2002 Civil Code articulates "social sense" as a provision for a new concept of resources, based on the Brazilian constitutional principle that the function of property must be social, this, overpowers the interpretation of which property could be an exclusive service of the interests of individuals (dos Santos Cunha, 2011).

This new understanding of the text of Article 1228 of the 2002 Civil Code, whose first paragraph reads:

“The right of property must be exercised in accordance with its economic, social and environmental ends, so that the flora, fauna and natural beauties are preserved, as well as the ecological equilibrium and the historical and artistic patrimonies, and so that air and water pollution are averted, in obedience to the rules established by specific legislation” (Civil Code, 2003).

Thus, the 2002 Civil Code broke Brazilian legal traditional thought by linking the exercise of property rights to economic, social, and environmental ends, and for the benefit of society. The Code adopts the social function of property by imposing a duty of solidarity upon the owner (dos Santos Cunha, 2011).

2.2 Legal history of private property in Brazil

Since the Portuguese arrived in Brazil, the country acquired different types of laws adapted to Portuguese living standards; including the characteristic of Portuguese land ownership. Since the year 1500, the Brazilian lands became part of the Portuguese kingdom public domain. It was the start of the Sesmarial period, from 1530 to 1850, characterized by the granting of large tracts of land property; the Sesmarial period is recognized by the state giving to a juridical institute the occasion to regulate the distribution of agricultural lands (Silva, 1997).

Beholding the empire landlords' problems, on the 18th of September of 1850 the law 601 Euzébio de Queiroz, also known as “Land law” was created. The law provided for the legitimization of granted lands that had not fallen on commission, and the legitimization of other possessions, It was a way to stimulate the entry of immigrants to Brazil, since it foresaw the end of slave labor, being necessary the transition to free labor (Alcantara et al., 2009).

In the initial period to of the Republic, 1889 until 1964, the legitimacy of the property was placed to a second level. It was not until 1981 that a law approved the issue of

property to the states and no longer to the union. On November 30, 1964, the First Agrarian Reform Law was instituted in Brazil, known as Law no. 4504. It introduced new concepts related to agrarian demand. The measurement of the lands would take place through fiscal modules, which vary according to the region (Lei n. 4504, 1964). Despite the reform of the law, and its important transformation within the Brazilian agrarian issue, it can be said that until now this did not leave the paper and agrarian reform still has not happened in the country (Alcantara Filho et al., 2009).

In summary, the problems are the following: 1.- Lack of information about the process of creation, 2.- Lack of economic resources to create RPPNs, 3.- Excess of documents required on a process of legalization, 4.- Long process of creation due bureaucracy, 5.- Conflict between development and conservation, and finally 6.- historical path of irregular legitimacy of the property.

2.3 Main objective

To promote municipal secretaries of environment to improve their strategies for RPPN establishment in the municipalities of the state of Rio de Janeiro.

Specific objectives are:

The specific objectives were to compare the strategies of the environmental secretaries and councils in seven municipalities of the state of Rio de Janeiro and to develop a guideline for the municipalities to promote the creation of a municipal RPPN law based on the experience of the municipalities of Porciuncula and Varre Sai with RPPNs

2.4 Research questions

1. Which are the differences in the legal municipal frameworks for the different municipalities that have an RPPN law in Rio de Janeiro state?
2. Which are the municipal strategies to encourage RPPN establishment?
3. Which is the owners' perception in the process of creation of RPPN?
4. Which are the disadvantages that hamper the creation of RPPN and the advantages for the municipalities in the process of establishment of RPPNs?

5. Is the experience of other Latin-American countries have helpful in the development of recommendations for municipal Brazilian RPPN law?

3 Study area

3.1 State of Rio de Janeiro

The State of Rio de Janeiro is formed by 92 municipalities. It is located in the Atlantic Forest biome. Today, the remains of the forest occupy about the 11.6 % of the total area of the state. It hosts different ecosystems such as dense umbrophilous forest, seasonal deciduous forest, semideciduous seasonal forest (or "forest of board"), mangroves, restingas (vegetation on sand, near of marine coast), fields of altitude and swamps, and bathed (INEA B, 2017) (Figure 9). The last five hundred years, successive economic cycles based on the exploitation of natural resources, have led to enormous destruction of the Atlantic Forest. Currently, the state has areas that form part of the compound system of Conservation Units (UC). The state UC cover an area of 3,967 km² (9.06 % of the state territory) and are under the administration of the State Environmental Institute (INEA), an agency linked to the Secretariat of State for the Environment (SEA). The federal CU (11.03 % of the territory extend for 4,831 km² state river), is under the tutelage of the Chico Mendes Institute for Biodiversity Conservation (ICMbio) (Governo do estado do Rio de Janeiro, 2017).

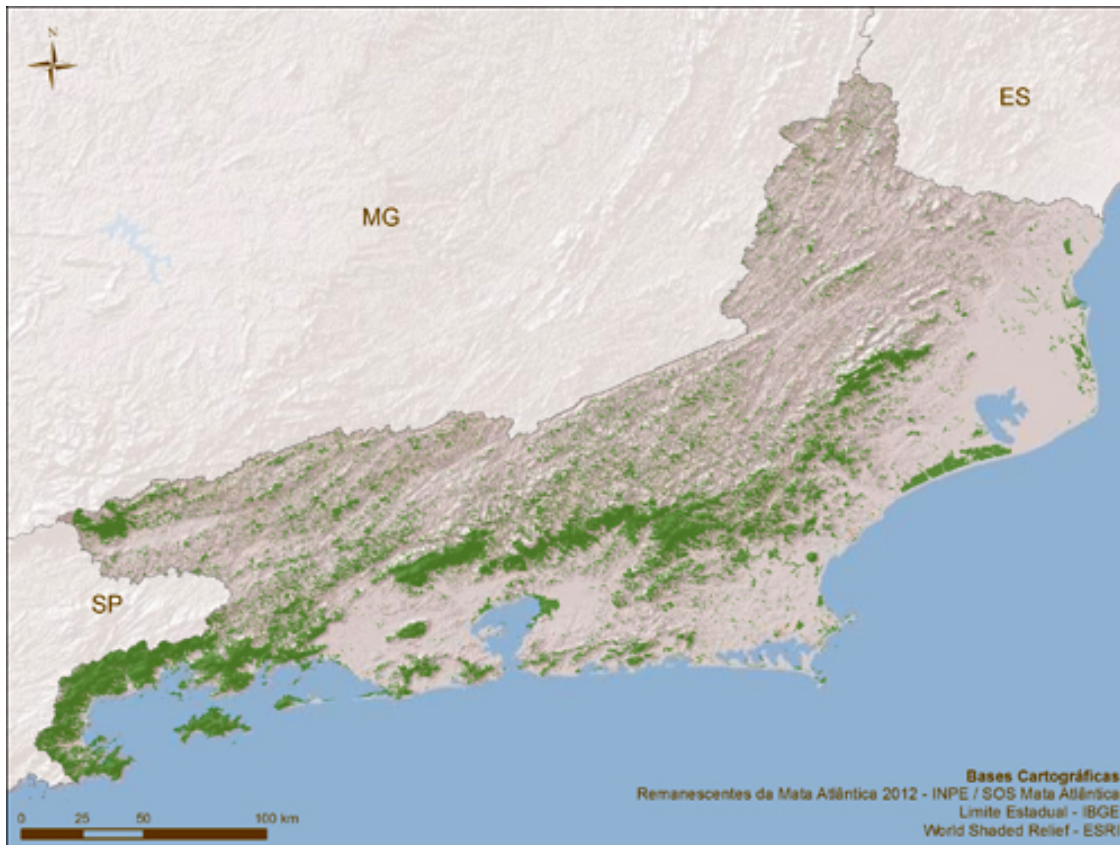


Figure 9 Remains of Atlantic Forest in the State of Rio de Janeiro from SOS Mata Atlântica 2017

3.2 Seven Municipalities

The municipalities of Natividade, Nova Friburgo, Petropolis, Porciúncula, Resende, Rio Claro and Varre Sai are where the law study was done (Figure 10).

The Percentage of Remnant Forest by municipality is the following: The Municipalities of Nova Friburgo, Petropolis, and Rio Claro have more than 40 % of remnant forest inside their municipalities. The municipality of Resende, the percentage of remnant forest is between 20 % and 40 %, and the municipalities of Natividade, Porciuncula and Varre sai, have less than 20 % of remnant forest in their municipalities (Bernadete and Cruz, 2009).

Through the different municipalities, and according to their geographic location in the state, the principal environmental impacts of the region are as follows: in Varre Sai,

Porciuncula and Natividade, severe erosion process due to disordered occupation, abrupt growth of industrial activities and services, burning of sugar cane, disposal of municipal solid waste in dumps, monoculture of sugarcane and coffee, mineral extraction, intense use of pesticides, and the predatory fishing (INEA B, 2017). In the municipality of Nova Friburgo and Petrópolis, the principal environmental impacts of the region are irregular occupation in permanent preservation areas (APP), illegal extraction of groundwater, untreated sewage dump in water bodies, and sedimentation of water bodies (INEA B, 2017). In the municipality of Rio Claro and Resende, the principal environmental impacts of the region are: disposal of sanitary sewage in natural in water bodies, pollution of air and water by industries, disposal of solid waste in inappropriate places, and soil degradation due to mineral extraction activities (INEA B, 2017).

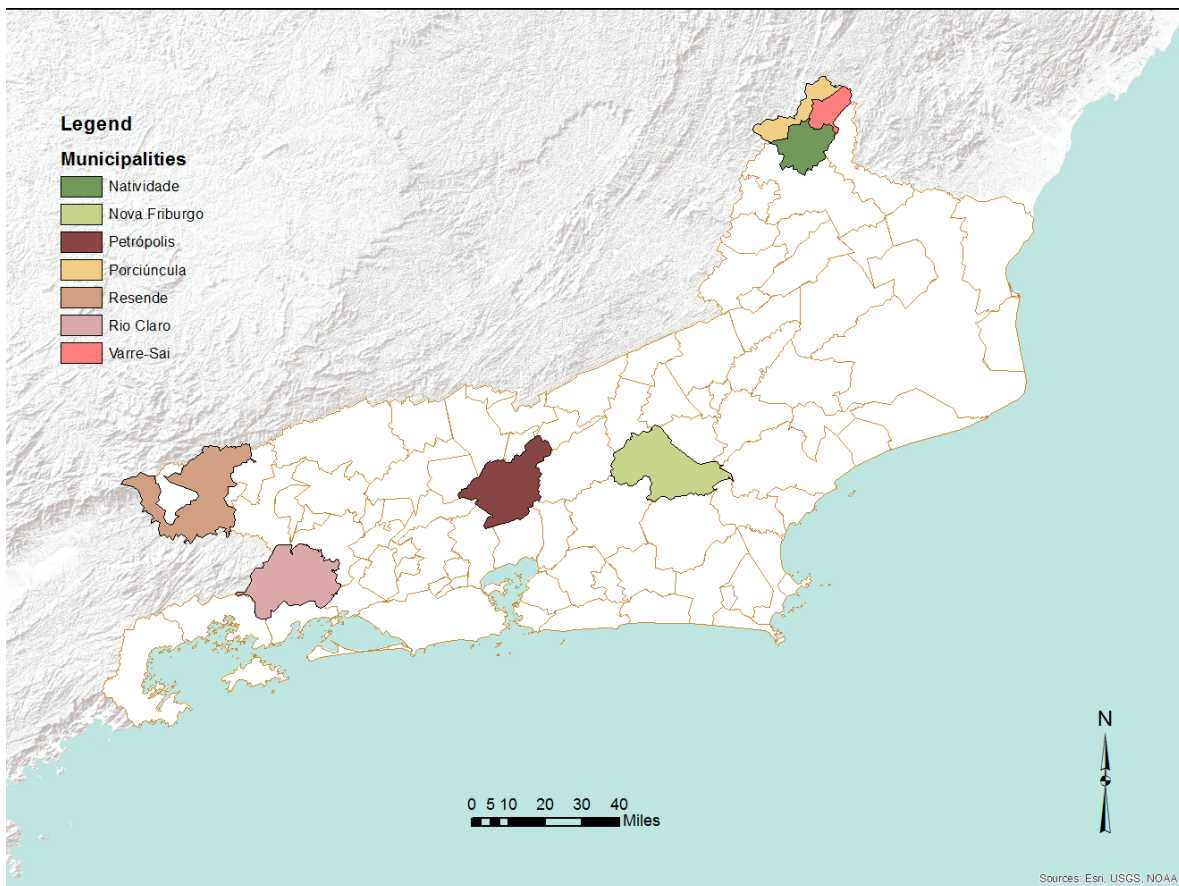


Figure 10 State of Rio de Janeiro, municipalities analyzed.

4 Methodology



RPPN workshop in the municipality of Trajano de Morais with INEA's RPPN team.

4.1 Comparison of the law

The federal, state and municipal law that govern the jurisdiction of RPPN, were collected and analyzed in order to find legislative gaps, because, in the process of creation at a municipal level, some municipal laws could have regulations that other municipal laws do not have. Then the laws were analyzed in comparison method with the view to extracting the differences and similarities in the process of creation at a municipal level (Momirov and Fourie, 2009).

In this case, the RPPN municipal law was compared between seven municipalities, taking the municipal RPPN law of Varre Sai as a prototype to compare to the other. Additionally, the complementary Green ICMS municipal Law for RPPN from the municipality of Varre Sai was analyzed to present to the audience (Figure 11).

The comparison between the seven municipalities, was based on the Varre Sai municipal law (Law N° 570/2010). Varre Sai RPPN law was used as a prototype to compare the other six municipalities, the decrees of Petropolis and Nova Friburgo and the laws of Rio Claro, Natividade, Resende and Porciuncula. First, the laws were analyzed in order to extract the main components of each one. Then, they were standardized in order to compare between each other. The standardization was made by logical thinking, by comparing the particularities of every law. Moreover, the complementary Green ICMS municipal Law for RPPN from the municipality of Varre Sai was analyzed, explaining the use of it and its importance.

Figure 11 Location and Hierarchy of the laws analyzed

Availability of the laws	Federal	State	Municipal
Responsible institutions in the study area			<ul style="list-style-type: none"> • RPPN Law • Green ICMS Law

4.2 Perception survey for the RPPN owners in Varre Sai and Porciuncula

A semi structured survey was applied to the owners of RPPN in the municipalities of Porciuncula and Varre Sai in order to learn of their experience during the creation of their RPPN. Ten surveys were carried out, nine in the municipality of Varre Sai from those, seven were municipal RPPNs, and one state RPPN and one in the municipality of Porciuncula, a state RPPN owner. Most of the interviews were performed on the properties of the RPPN owners and in some cases at EMATER facilities, with a duration of about thirty minutes each one. During the interview, the data was collected in writing and audio recording. The interviews were conducted in Portuguese; the design of the questionnaires was also in Portuguese (Annexed 8.1). The period of application was during the month of May of 2017. The topics for the questionnaire were adjusted from Cifuentes, et al., (2000) and Leverington, et al., (2008) and adapted for the study case (Figure 12).

Figure 12 Topics for the owners perception Survey

Topics	Variables	Sub Variables
Administrative	<ul style="list-style-type: none"> • Organization of the Institutions • Infrastructure of the Institutions • Financing 	<ul style="list-style-type: none"> • Files • Structure • Operating budget • Regularity of budget delivery • Extraordinary and / or special financing • Costs
Political	<ul style="list-style-type: none"> • Community participation • Interinstitutional support • Bureaucracy 	<ul style="list-style-type: none"> • Administration and support from INEA, ONG or others. • Duration of the process
Legal	<ul style="list-style-type: none"> • Property of the land • Conflicts 	<ul style="list-style-type: none"> •
Knowledge	<ul style="list-style-type: none"> • Laws and codes 	<ul style="list-style-type: none"> • Clarity to support creation • Legal information

Threats	<ul style="list-style-type: none"> • Infrastructure for development • Illegal activities • Contamination impact • Economic crisis 	
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The topics were adjusted from Cifuentes et al, 2000 and Leverington, et al., 2008; a semi structure questionnaire was made to know the municipal RPPN owners’ perception in the municipalities of Varre Sai and Porciuncula.

4.3 Perception survey for the RPPN owners in the state

A survey of perception during the process of creation of the RPPN was conducted to the RPPN owners in the whole state in order to know the opportunities and threats of the future owner and municipalities, to create more RPPN, by developing a structured survey and sending it through e-encuesta online software to all the RPPN owners emails in the state (Annex 8.3). There were 86 surveys sent, 32 questionnaires were answered. The survey was applied during the months of April, May and June of 2017. There were twenty questions applied, and the time of duration was about five minutes answer. The topics for the questionnaire were adjusted from Cifuentes, et al., (2000) and Leverington, et al., (2008) adapted for the study case (Figure 13).

Figure 13 Topics perception survey for owner from all the municipalities of Rio de Janeiro state

Topics	Variables	Sub variables
Administrative	<ul style="list-style-type: none"> • Organization • Infrastructure 	<ul style="list-style-type: none"> • Structure
Political	<ul style="list-style-type: none"> • Community participation • Interinstitutional support • Bureaucracy 	<ul style="list-style-type: none"> • Administration and support
Juridical knowledge	<ul style="list-style-type: none"> • Laws and codes 	<ul style="list-style-type: none"> • Clarity to support creation • Legal information

The topics were adjusted from Cifuentes et al, 2000 and Leverington, et al., 2008; a semi structure questionnaire was made to know the municipal RPPN owners’ perception in all the municipalities in Rio de Janeiro state.

4.4 Perception survey for the state municipal environment decision makers

A structured survey of perception of RPPN was developed and conducted to the environment decision makers of each municipality in the whole state sending it through e-encuesta online web page to all the representatives' emails in order to know the opportunities and threats and knowledge in the municipalities about RPPNs law (Annex 8.2). There were 92 surveys sent, the survey was applied during the months of April, May and June of 2017. There were seventeen questions, and the time of duration was about five minutes to answer. The topics for the questionnaire were adjusted from Cifuentes, et al., (2000) and Leverington, et al., (2008) adapted for the study case (Figure 14).

Figure 14 Topics for the perception survey for the state municipal environment decision makers.

Topics	Variables	Sub Variables
Political	<ul style="list-style-type: none"> • Community participation • Interinstitutional support 	<ul style="list-style-type: none"> • Administration and support
Threats	<ul style="list-style-type: none"> • Infrastructure for development 	
Juridical knowledge	<ul style="list-style-type: none"> • Laws and codes 	

The topics were adjusted from Cifuentes et al, 2000 and Leverington, et al., 2008; a semi structure questionnaire was made to know the municipal environmental decision makers' perception in all the municipalities in Rio de Janeiro state.

4.5 Experts survey related to RPPNs in the state

A survey was conducted to experts related to RPPNs of each municipality in the whole state, in order to know the opportunities and threats of the future owner and municipalities RPPN law; by developing a semi structured survey and applied in person at their institutions, offices, or by email. There were five surveys applied,

during the months of April, May and June 2017. ONG, state institutions and associations of owners were interviewed (Figure 15). Roberta Guagliardi, INEA chief of RPPN, Manoel Duarte, EMATER extensionist Varre Sai, Monica Fonseca, SOS Mata Atlântica, RPPNs incentive program and Deise Moreira, former chief of APN/RJ were the experts interviewed.

Figure 15 Themes applied for the experts survey

Themes	Variables	Sub variables
Administrative	<ul style="list-style-type: none"> • Organization • Infrastructure 	<ul style="list-style-type: none"> • Structure
Political	<ul style="list-style-type: none"> • Community participation • Interinstitutional support • Bureaucracy 	<ul style="list-style-type: none"> • Administration and support
Juridical knowledge	<ul style="list-style-type: none"> • Laws and codes 	<ul style="list-style-type: none"> • Clarity to support creation • Legal information

The topics were adjusted from Cifuentes et al, 2000; a semi structure questionnaire was made to know the experts' perception in Rio de Janeiro state.

4.6 Comparison with the Mexican experience

A literature review and analysis was made in order to know the Mexican model with private protected areas; then, a comparison with the Brazilian RPPNs model was also applied, in order to know the opportunities and threats from the different models.

4.7 Development of a guideline

This guideline resulted from the analysis of the different laws and the revision from the owners of RPPNs and environmental decision makers' perception; taking into account for it to become a single law or template for the municipalities that would

like to create their own RPPN law. It explains the structure and body of the law, some recommendations.

5 Results

5.1 Comparison of the laws

5.1.1 The RPPN municipal law main components

The main components of the Varre Sai RPPN Law are: 1.- Justification to create RPPN based on the Federal Law nº 9985/2000, 2.- Juridical description of the areas 3.- Main objectives of the areas 4.- Activities that can be done inside the areas 5.- Process of creation done by the applicant, and detailing of the documents for the process of creation 6.- Responsibility of the Institution responsible 7.- Exception of the land to become RPPN 8.- Responsibilities of the owner 9.- Rights of the authority 10.- Enforcement of the law in case it needs it 11.- Specification of the Benefits for the creation of an area (exception of tax) 12.- Institution in charge to execute the law 13.- Attachments: Terms of compromises and forms to start the process of creation.

In the following, every main component is explained:

1.- Justification to create RPPN based on the Federal Law nº 9985/2000:

Based on the prerogative of the hierarchy of the law, all the municipal RPPN laws should be justified by the Federal law 9.9985/2000, the same that created the SNUC and in the same manner the RPPN (Art 1).

2.- Juridical description of the areas:

In this case, the municipality of Varre Sai, describe, how the RPPN will be considered under the municipal law and authority, and its category of protection. Established by the SNUC, the RPPN are in the sustainable use group; however, the autonomy of the municipality allowed them to establish the Municipal RPPNs in any of the two categories. In this case, Varre Sai establish them as in the Integral protection (Art 1, 2nd paragraph).

3.- Main objectives of the area:

Because of the legislative liberty of the municipality, the objectives may be described under the law, every municipality can make modification the objectives inside of the protected area (Art 2)

4.- Activities that can be done inside the areas:

Every municipality can change activities inside of the protected area, as long as, its activities and objectives are within the federal regulation (Art 3).

5.- Process of creation done by the applicant and detailing of the documents for the process of creation:

Here the documentation required to create the RPPN is explained; the basic requirements are: personal documentation and the title of property of the land, (including the topographic measurement of the area of the land), this requirement can also change in every municipality. For the municipality of Varre Sai are: a) the request for the creation of the RPPN inside the owner's property, specifying that it could be created by juridical or physical person, b) certification of the identity of the owner, c) title of domain (property) of the land, d) discharge of the Tax on Urban Territorial Property (IPTU by its acronym in Portuguese), e) georeferenced situation plans, indicating limits of the area that can become protected, and f) terms of commitment (Art 4, and 5).

6.- Responsibility of the Institution responsible:

The responsibilities can also change between each municipality. For Varre Sai the institutional responsibilities are: a) technical inspection ("vistoria" in Portuguese) of the are proposed to become RPPN, including the typology of the flora and fauna, state of conservation of the area, indicating the potentially degrading pressures of the environment and relating the developed activities in the property, b) issue an opinion of the description; c) approve the application through the authority, and d) publish the decrees that recognizes the area as RPPN in the municipal official journey (Art 6).

7.- Commitment to recovery:

One special exception is also added to the land in the process of becoming an RPPN; the land area could have up to thirty percent of the area destined to environmental recovery (Art 6, 2nd paragraph).

8.- Responsibilities of the owner:

In case the area is approved to be protected, the owner will have to endorse the RPPN into the Public Notary. The responsibilities of management and protection will be conferred to a) ensure the maintenance of the environmental attributes and to promote its dissemination in the municipality, b) submit to the approval of the institution responsible for recognition a management plan for the use of the reserve, and c) carry out a report on the activities and status of the reserve, every time the body responsible request it (Art 7, 8 and 9).

9.- Rights of the authority:

The institution responsible will have the right to visit the protected area, or share this right to an environmental institution or university so that can validate the activities and the status within the RPPN (Art 10).

10.- Enforcement of the law in case it needs it:

it is an obligation of the institution responsible to inform the owner any irregularity or damage performed in the RPPN, and to establish a term within, the owner will have to manifest it in the accusations. In the case of the violation of the law, the offender will be the subject of an administrative sanction, without prejudice to civil and criminal liability. In the case the violation is committed by the owner, in addition to the penalties proven, the reduction or exception of taxes may be suspended for subsequent periods (Art 11).

11.- Specification of the Benefits for the creation of an area (Exception of Tax):

The owner may request to the Municipal Treasury Department the reduction or exemption of the Tax on Urban Territorial Property (IPTU by its acronym in Portuguese). The owners of municipal RPPNs may also receive resources from the municipal environmental defense fund, and the Green ICMS (Art 12, 13, 14 and 15).

12.- Institution in charge to execute the law:

It is confirmed by the law which institution would be taking care of the enforcement of the law.

13.- Attachments:

Terms of compromises and forms to start the process of creation: There are two attachment bases on the process of creation of these protected areas: a) The Requirement of the creation of a RPPN, and b) the Terms of compromise.

5.1.2 Scheme of comparison of all the municipal RPPNs Laws and Decrees

Figure 16 Comparison of all the Municipalities RPPN law.*

Main components based on law Nº 570/2010	Law Nº 570/2010 Municipality of Varre Sai	Decree Nº 049/2005 Municipality of Petropolis	Decree Nº 147/2015 Municipality of Nova Friburgo	Law Nº 486/2010 Municipality of Rio Claro	Law Nº 492/2010 Municipality of Natividade	Law Nº 4502/2009 Municipality of Resende	Law Nº 2221/2017 Municipality of Porciuncula
<i>1.- Justification to create RPPN</i>	- Based on the federal law nº 9985/2000		- Based on the federal law nº 9985/2000 - State decree 40.909/2007		- Based on the federal law nº 9985/2000	- Based on the federal law nº 9985/2000	- Based on the federal law nº 9985/2000
<i>2.- Juridical description of the areas</i>	- Integrated protection unit	-Sustainable group	-Integrated protection unit				-Integrated protection unit
<i>3.- Main objectives of the areas</i>	- Protection of the environmental resources - Conservation of the biological diversity	- Protection of the environmental resources	Conservation of the Mata Atlántica biodiversity - Water resource quality		Conservation of the biological diversity		- Protection of the environmental resources -Conservation of the biological diversity
<i>4.- Activities that can be done inside the areas</i>	- Scientific - Cultural - Educational - Recreation	- Scientific - Cultural - Educational - Recreation	- Scientific - Cultural - Educational - Recreation - Tourism	- Scientific - Cultural - Educational - Recreation - Tourism	- Scientific - Tourism - Educational - Recreation		-Scientific - Cultural - Educational - Recreation

Main components based on law Nº 570/2010	Law Nº 570/2010 Municipality of Varre Sai	Decree Nº 049/2005 Municipality of Petropolis	Decree Nº 147/2015 Municipality of Nova Friburgo	Law Nº 486/2010 Municipality of Rio Claro	Law Nº 492/2010 Municipality of Natividade	Law Nº 4502/2009 Municipality of Resende	Law Nº 2221/2017 Municipality of Porciuncula
<i>5.- Process of creation done by the applicant</i>	<ul style="list-style-type: none"> - Requirement of the RPPN creation - Personal identification - Property title - Topographic georeference - Terms of commitment 	<ul style="list-style-type: none"> -Property title -Personal identification -Topographic georeference 	<ul style="list-style-type: none"> -Property title -Personal identification -Topographic georeference - Discharge of the Rural Territory Property (ITR) tax 		<ul style="list-style-type: none"> -Requirement of the RPPN creation - Terms of commitment 		<ul style="list-style-type: none"> - Requirement of the RPPN creation - Personal identification - Property title - Topographic georeference - Terms of commitment
<i>6.- Responsibility of the Institution responsible</i>	<ul style="list-style-type: none"> - Technical inspection "vistoria" - summary of findings - approve the application through the authority - publishing of the decrees 	<ul style="list-style-type: none"> - Technical inspection "vistoria" - approve the application through the authority - publishing of the decrees 			The topographic georeference expenses will be taken by the government		<ul style="list-style-type: none"> - Technical inspection "vistoria" - summary of findings - approve the application through the authority - publishing of the decrees
<i>7.- Commitment to recovery</i>	<ul style="list-style-type: none"> - Until thirty percent 			<ul style="list-style-type: none"> -The hole area by commitment of recovery 			<ul style="list-style-type: none"> - Until thirty percent

Main components based on law Nº 570/2010	Law Nº 570/2010 Municipality of Varre Sai	Decree Nº 049/2005 Municipality of Petropolis	Decree Nº 147/2015 Municipality of Nova Friburgo	Law Nº 486/2010 Municipality of Rio Claro	Law Nº 492/2010 Municipality of Natividade	Law Nº 4502/2009 Municipality of Resende	Law Nº 2221/2017 Municipality of Porciuncula
8.- Responsibilities of the owner	<ul style="list-style-type: none"> - Registration into the public notary - Ensure the maintenance of the environment - submit to the approval of management plan - Carry out a report for the activities and status 	<ul style="list-style-type: none"> -Management plan. - Ensure the maintenance of the environment - Registration into the public notary - Carry out a report for the activities and status 	<ul style="list-style-type: none"> - Management plan within five years. - Ensure the maintenance of the environment 		<ul style="list-style-type: none"> - Registration into the public notary - Ensure the maintenance of the environment - Management plan. 	<ul style="list-style-type: none"> - Ensure the maintenance of the environment 	<ul style="list-style-type: none"> - Registration into the public notary - Ensure the maintenance of the environment - Submit to the approval of management plan - Carry out a report for the activities
9.- Rights of the authority	<ul style="list-style-type: none"> - Visit the protected area 	<ul style="list-style-type: none"> - Visit the protected area 		<ul style="list-style-type: none"> - Visit the protected area 			<ul style="list-style-type: none"> - Visit the protected area
10.- Enforcement of the law	<ul style="list-style-type: none"> - The offender will be subject to an administrative sanction, or to civil and criminal liability - The reduction or exception of taxes may be suspended for subsequent periods 		<ul style="list-style-type: none"> The law says: it is forbidden the insert of other species in the protected area 	<ul style="list-style-type: none"> - The offender will be subject to an administrative sanction, or to civil and criminal liability 			<ul style="list-style-type: none"> - The offender will be subject to an administrative sanction, or to civil and criminal liability - The reduction or exception of taxes may be suspended for subsequent periods

Main components based on law Nº 570/2010	Law Nº 570/2010 Municipality of Varre Sai	Decree Nº 049/2005 Municipality of Petropolis	Decree Nº 147/2015 Municipality of Nova Friburgo	Law Nº 486/2010 Municipality of Rio Claro	Law Nº 492/2010 Municipality of Natividade	Law Nº 4502/2009 Municipality of Resende	Law Nº 2221/2017 Municipality of Porciuncula
11.- Specification of the Benefits	- Tax on Urban Territorial Property (IPTU). - The municipal environmental defense fund - The Green ICMS	-Exemption of IPTU	Environmental fund from the municipal council.	-Exemption of IPTU	- The Green ICMS 50%	Environmental compensations (not specific)	- Tax on Urban Territorial Property (IPTU). - The municipal environmental defense fund - The Green ICMS
12.- Institution in charge to execute the law	-Environmental Secretary	-Environmental Secretary	-Environmental Secretary and the Secretary of sustainable urban development	-Environmental Secretary		-Executive power	-Environmental Secretary
13.- Attachments	- The Requirement of creation of a RPPN -The Terms of commitment					- The Requirement of creation of a RPPN -The Terms of commitment - Guideline for technical description	- The Requirement of creation of a RPPN -The Terms of commitment

*In the orange boxes, are found the differences that fit in the same main components established for this comparison are found, in the blue empty boxes, is the representation of the gaps of the laws or decrees, in comparison with the law Nº 570/2010 from the municipality of Varre Sai, also, there were found some dissimilarities, exposed in the point 7.1.3.

5.1.3 Main differences in the comparison of the laws

All of the laws' articles were tried to be explained in in the main components scheme (Figure 16); nevertheless, some of the differences in the law could not fit into the main components standardized, those articles are specified in this section:

In the decree No^o 147/2015 from the municipality of Nova Friburgo, were found the next articles that bring out some differences from the other laws.

The article 4, talks about obligation of the public power, or institutional power, expressing that the institution in charge will always assist the owner of a RPPN with scientific or technical orientation; the Article 6 expresses, unlike all other laws, that the management plan has to be elaborated within the next five years of the creation of the RPPN; the Article 7, communicates, that from the municipal council environmental fund resources will be used to elaborate management plans, conduct research in the areas, develop an environmental education plan, provide financing for the economic viability studies for sustainable use in the areas. The Article 8 utters about the insertion of other species in the protected area, making this activity forbidden; and, the Article 9 conveys an obligation for the institution in charge to enforce this law to orientate the RPPNs to help the sub-indices that compose the basket of calculation of the Final Index of Environmental Conservation (IFCA, acronym in Portuguese).

Also, in the Law N^o 486/2010 from the municipality of Rio Claro, in the articles 2nd and 4th were found to contain some remarkable dissimilarities.

The Article 2, discusses the exceptions to become a protected area, saying that, it does not matter the percentage of degraded area inside the proposed area is, it could become protected, only if it is committed to recovery and if the degraded area is in the Tiguana-Bocaina Corridor; and in the article 4, express that there will be a

preference to create a protected area if the proposed one is next to another protected area.

Moreover, in the Law N° 492/2010 from the municipality of Natividade, the articles 4th, 5th and 8th were distinctive.

The article 4, submits the responsibility to government to perform the geo-referenced topographic work for the future owners of RPPN; in the Article 5, clearly expresses that it will be the municipal government and the federal government who will beware of the protected areas and the exemption of ITR tax; and, the article 8, refers to the municipal law 454/2009, specific law that will help in the process the enforcement the law in a civil or criminal liability.

Furthermore, the Law N° 4502/2009 from the municipality of Resende, in the attachment of the documents, enclosed a guideline for the technical inspection that should be applied in the process of creation of a RPPN.

5.2 The law 572/2010 from the municipality of Varre Sai

Referenced by the law 570/2010 from Varre Sai the Law N° 572/2010 is a supplementary law, the only municipal supplementary law found that talks about the transfer of Green ICMS. With the title “Cria o Sistema Municipal de Conservação da Biodiversidade de Varre Sai e autoriza o Chefe do Poder Executivo a efetuar repasse do ICMS à Associação Civil sem fins lucrativos e dá outras providências” (Creates the Municipal System of Biodiversity Conservation of Varre Sai and authorizes the Chief Executive to transfer Green ICMS to the non-profit Civil Association and makes other provisions). This law becomes the subject of study for its importance during the process of creation of a RPPN, because it interconnects the next step to ensure part of the financial rights of the RPPN owners, as well same as help the process of management of the protected areas (Guzman, 2016, *Guagliardi*, 2017).

It reflects the creation of the Municipal Biodiversity Conservation System from Varre Sai and its objectives of provide the municipality with natural coverage that will ensure the generations with the satisfactory maintenance of water bodies and soils, wildlife and stability of the climate and also the creation of private and public protected areas, creating connectivity corridors and recovery of the degraded areas.

The Article 3 talks about the municipal conservation incentives, and the Article 4, gives the recognition to the chief of the executive power to authorize the transfer of these incentives, making the acknowledgement, that it will be given, 60 % of the municipal annual Green ICMS to the RPPN owners. The Article 4 also talks about the creation of an agreement between a civil association and the municipality to achieve the transfer of these incentives to the RPPN owners. The Article 5 makes it understood that the only procedures to transfer the money to the owners will be by: 1) negotiation between the RPPN owner and the municipality, 2) by a signing agreement between the municipality and a non-profit entity enclosed project with plan of application of the resources to be received by the owner of RPPN, and 3) accountability of resources received.

The requirements placed on the non-profit organization are the following: 1) signing agreement between the municipality and the non-profit organization in the form directed by the Court of Accounts of the state of Rio de Janeiro, and 2) the non-profit entity must be registered with the Municipal Council for the Environment and have been acting for biodiversity conservation for at least three years prior to the conclusion of the agreement.

In this case, it was found that the Natural Patrimony Association is the one that has completed the requirements, and from 2011 to 2015 was the non-profit organization in response to transfer the money from the municipal government to the RPPN owners.

5.3 RPPN owners' perception in Varre Sai and Porciuncula

The maps below show the location of the RPPN in Varre Sai (Figure 17) and in Porciuncula (Figure 18) and where the surveys were carried out.

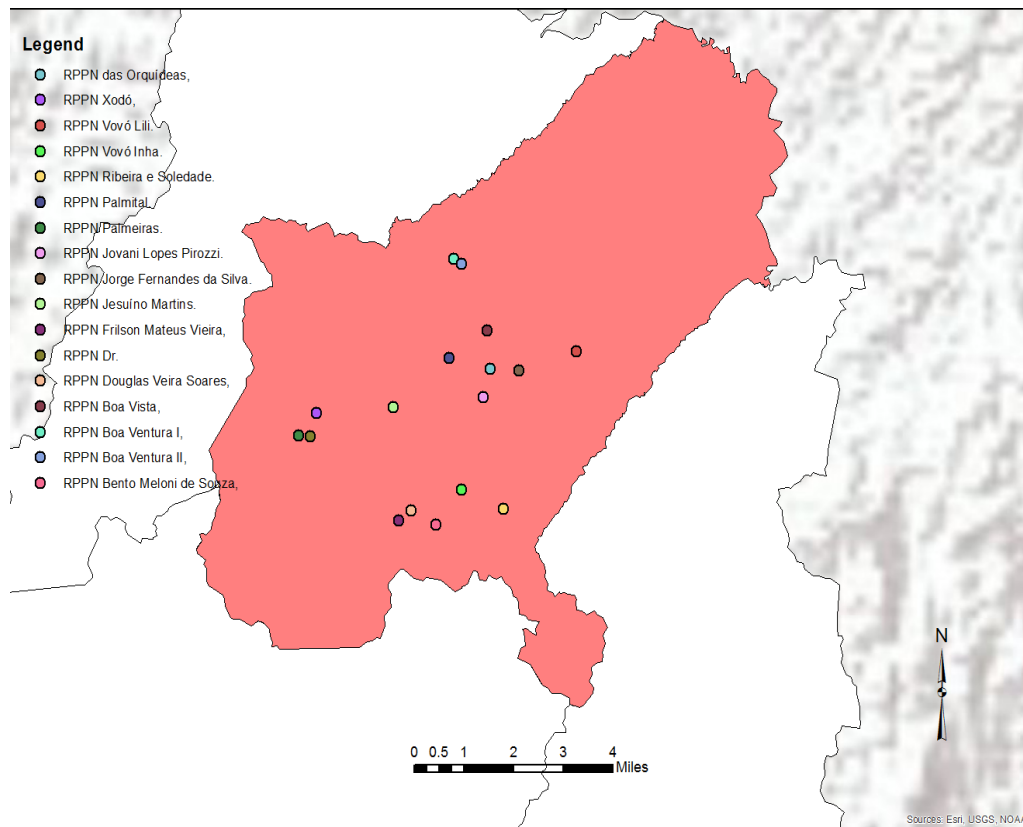


Figure 17 Location of RPPNs in Varre Sai from Guzman, 2016

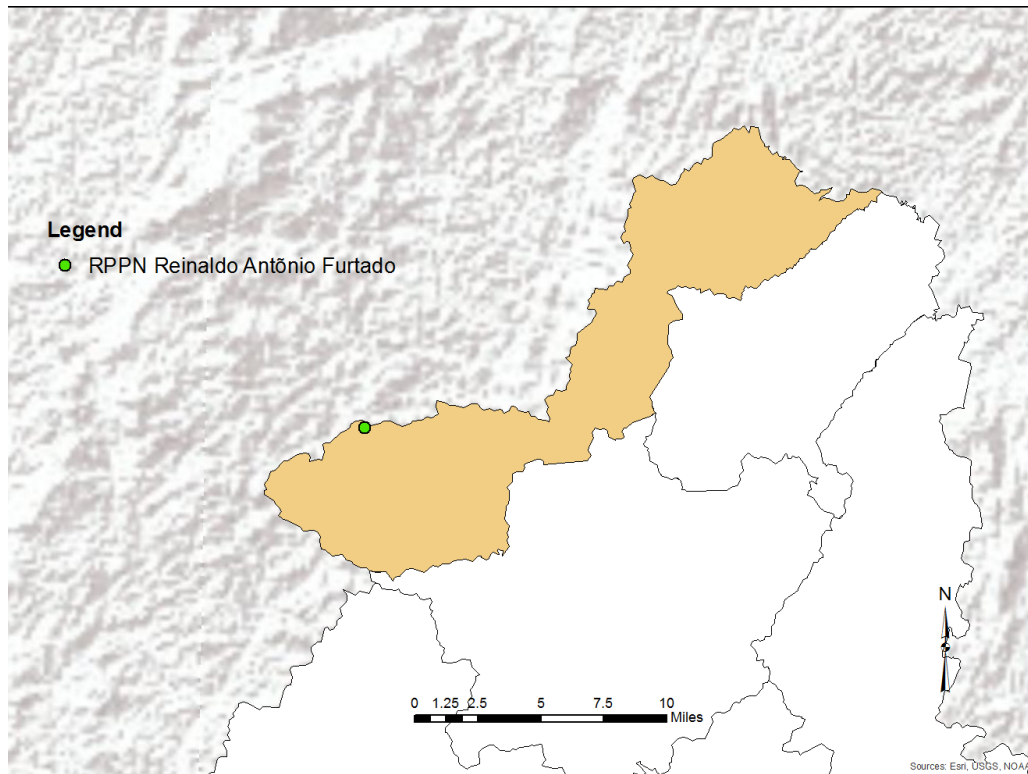


Figure 18 Location of RPPNs in Porciuncula from Guzman 2016

5.3.1 Motivation to create RPPNs

In Varre Sai and Porciuncula the motivation to create RPPN was backed by 100 % of the interviewed in the Environmental conservation; also, 40 % said that the economic incentive was a motive, follow by 30 % that also said that moral obligation and family interest in the land was a determinant to create the RPPN (Figure 19).

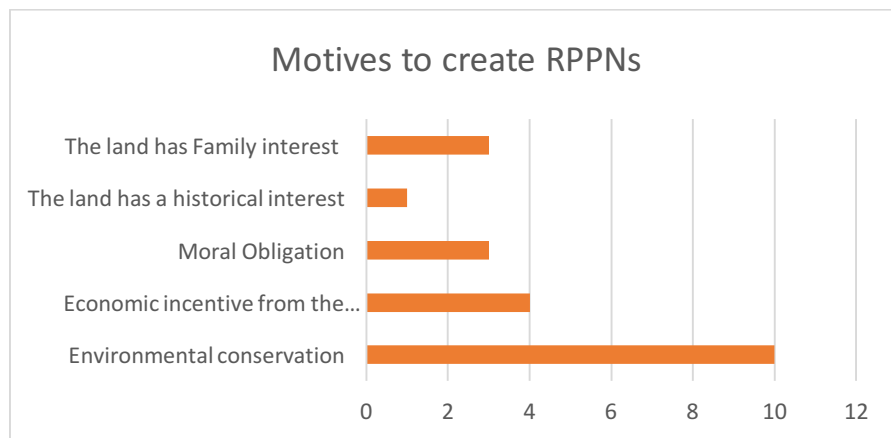


Figure 19 Motives to create RPPNs

5.3.2 Registration in the rural environmental registry

From the total of the interviewed, the 90 % were registered in the registration in the rural environmental cadaster (CAR in Portuguese) only 10 % were not (Figure 21), Most of them were registered as legal reserves 70 % and the other 30 % was registered as permanent protection area (Figure 20).

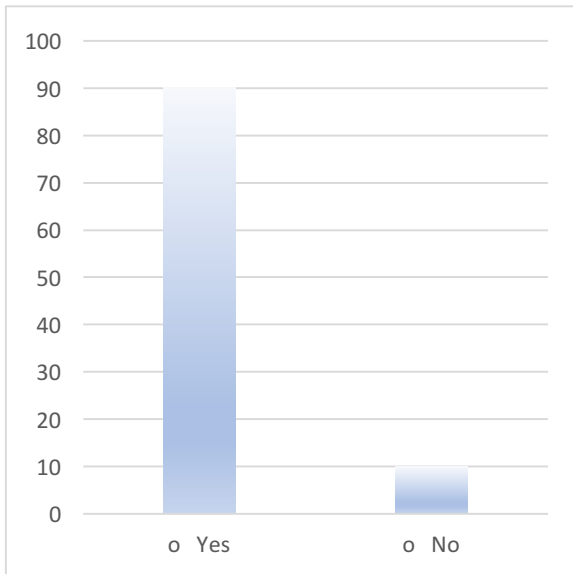


Figure 21 RPPNs registered in the CAR

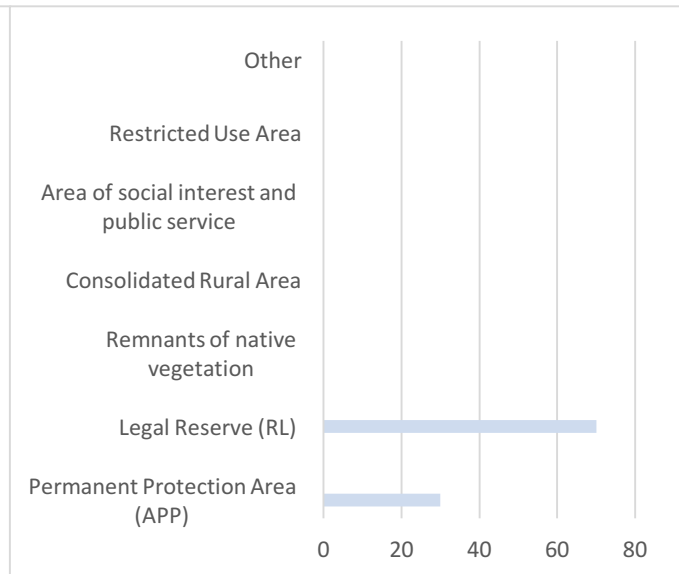


Figure 20 CAR's registration category

5.3.3 Time with a RPPN and management plan

From the RPPN owners interviewed, four of them have had their RPPN certificate between seven to ten years, three have had theirs between four and six years, one has had it less than one year, another one has one to three and only one has had it more than ten years (Figure 23). Nevertheless, none of them has a management plan for their RPPN (Figure 22).

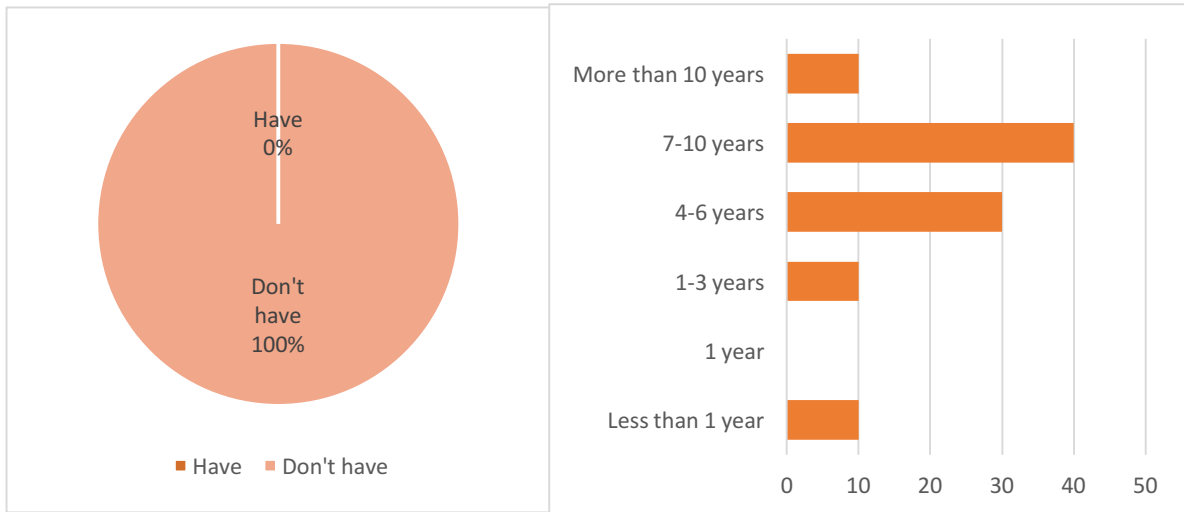


Figure 23 Percentage of RPPNs with management plan

Figure 22 Years since the creation of the RPPN

5.3.4 Perception during the process of creation

From when they start the process of creation by signing the petition to become RPPN, until received the accreditation of RPPN is received and registered into the public notary, the time spent was different for the municipal and the state RPPNs owners. For the municipal RPPNs owners it took less than one year to two years, for the state RPPNs owners it took between two years and seven years to have the accreditation of RPPN (Figure 25).

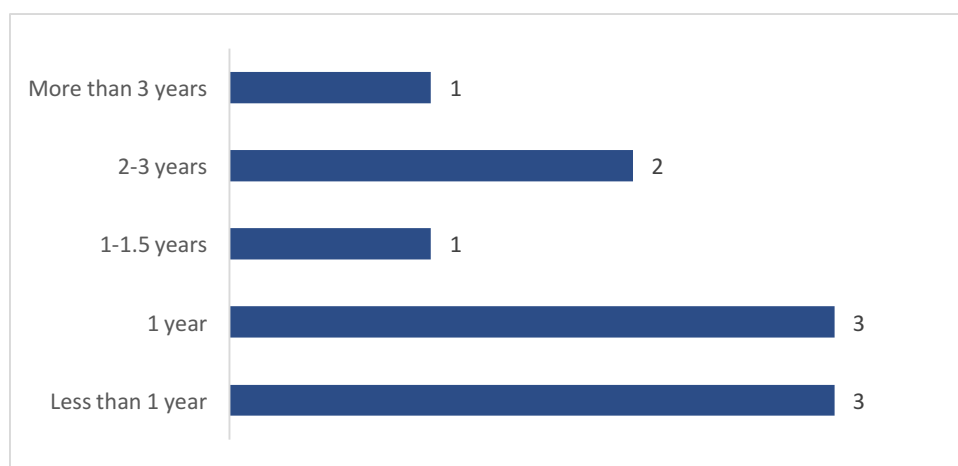


Figure 24 Time used in the process of establishment

During the process, 60 % of the RPPN owners said that there was no one in the municipality to answer their questions and 40 % said there was someone who could help them, but all of them say that EMATER Varre Sai helped them in the process of creation, explained the steps, and helped them with the documents.

The time for the municipality or the state to analyze the document was for the six of the municipal RPPN owners, less than three months and in one case less than six months; for the state RPPN owners, in two cases, between three and six months and in one case, more than one year (Figure 25).

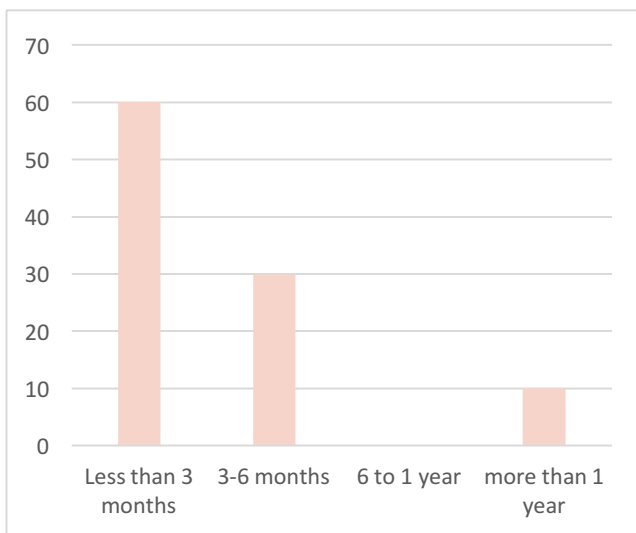


Figure 25 Time of documents analysis

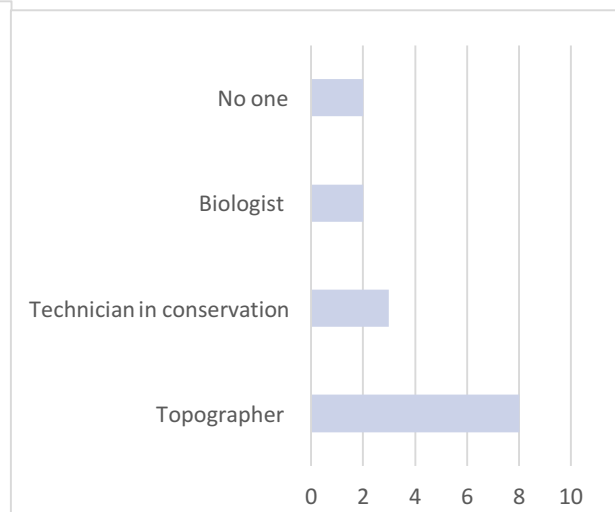


Figure 26 Specialist who worked on the establishment process

They were asked about the specialist who works in the procedure of technical inspection and topographic georeference, eight of them said that a topographer went to the area, three of them said that there was help by a technician in conservation and two of them by a biologist. Two more said that no one went to the area. Some of the interviewed said that some ONG as SOS Mata Atlântica and APN/RJ for municipal RPPN owners and INEIA for the state RPPN owners, helped them with providing specialists (figure 26).

On the expenses for the creation of the RPPN, 50 % of the owners did not spend money in the process of creation, accordingly, SOS Mata Atlântica or the Municipal Government helped them with the expenses; 30 % said they expend less than 500 Reais (€140 approximately), 10 % said they expend between 500 and 2000 Reais and other 10 % expend more than 5000 Reais. Seven of ten owners received incentives as Green ICMS while the other three did not receive any incentives (Figure 28). Only two owners have a tax exemption as ITR tax and none of the RPPN owners has an economic activity inside their protected area.

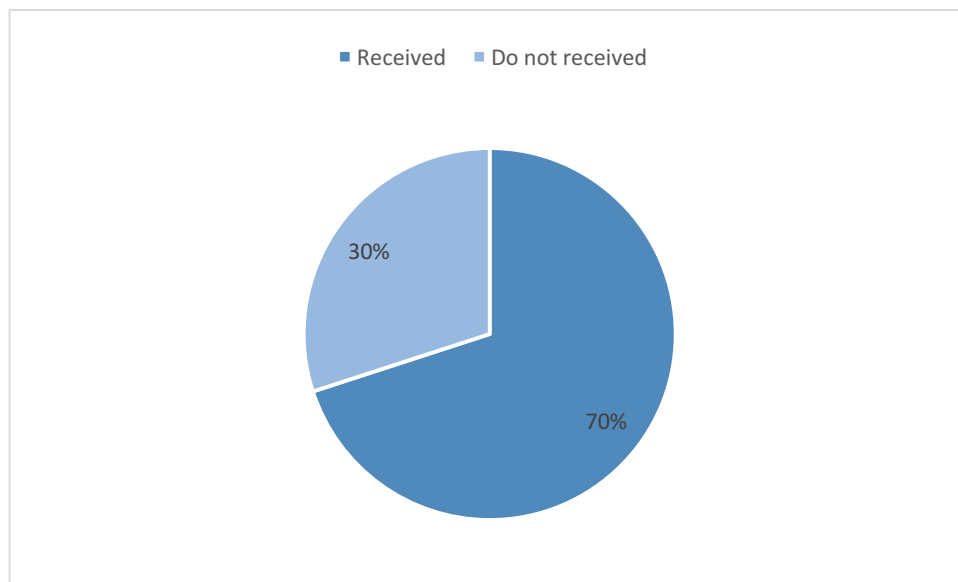


Figure 27 Incentive for the creation of RPPNs

The RPPN owners said that during the process of creation they had some difficulties two of them said that the process took a lot of time, two more said that the paperwork was the most difficult part of during the creation. Four said that bureaucracy was the more difficult and five of them said that they did not find it difficult (Figure 28). However, all of the interviews said they would definitely create another RPPN.

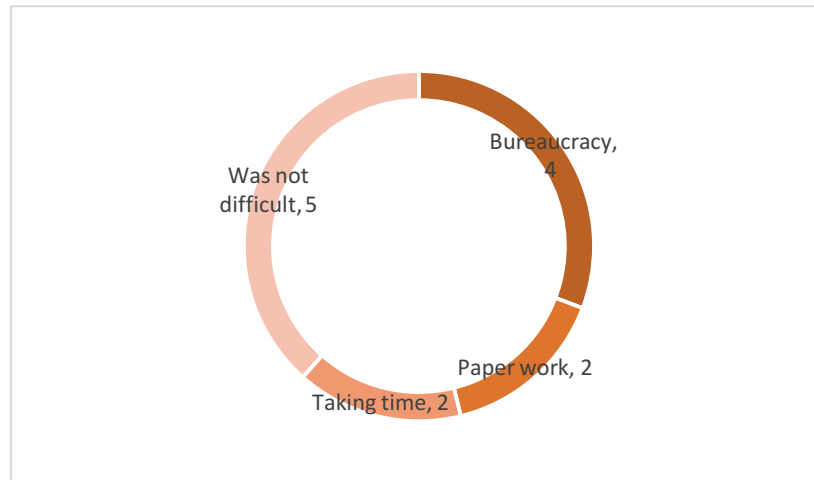


Figure 28 Difficulties during the creation process

5.3.5 Perception of the municipal administration

Eight of the RPPN owners said that the creation of RPPN depends on the government, and all of them said that it depends on the owners. Also, eight of them said that the municipalities have programs to encourage the creation of RPPN. Nonetheless, six of ten said that they do not have enough personnel or infrastructure to create more RPPN. The same number of persons do not think that the municipal government is prepared to establish more RPPNs (Figure 30). Moreover, five of them said that they know that there are existing funds from federal institutions or NGO that support the municipalities the creation of more protected areas.

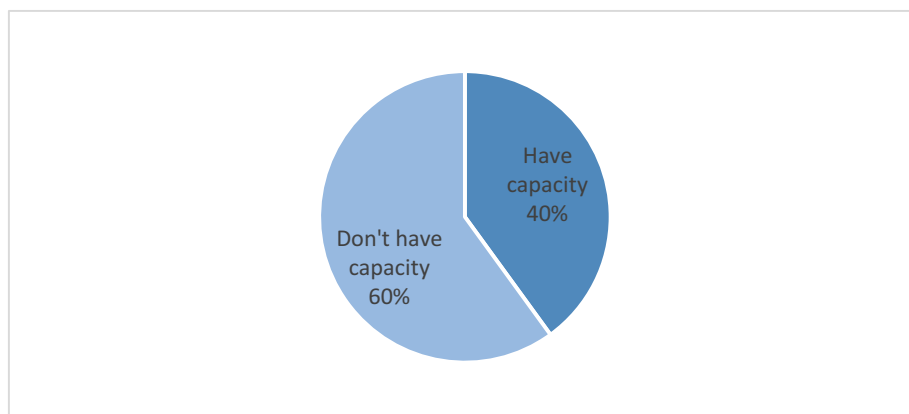


Figure 29 Owners perception about government capacity to create RPPNs

All of the owners interviewed believe that the State of Rio de Janeiro was in an economic crisis, that directly affected the establishment of more protected areas and the process of conservation in the whole state directly.

5.3.6 Perception of APN/RJ

Seven of ten owners interviewed are registered in the association APN/RJ, six of them say that they have seen recent programs supporting the establishment of RPPN. Six of ten, said that they do not have enough personnel trained to support the establishment of more RPPN and six of ten say they do not have enough infrastructure to create more RPPN (Figure 31).

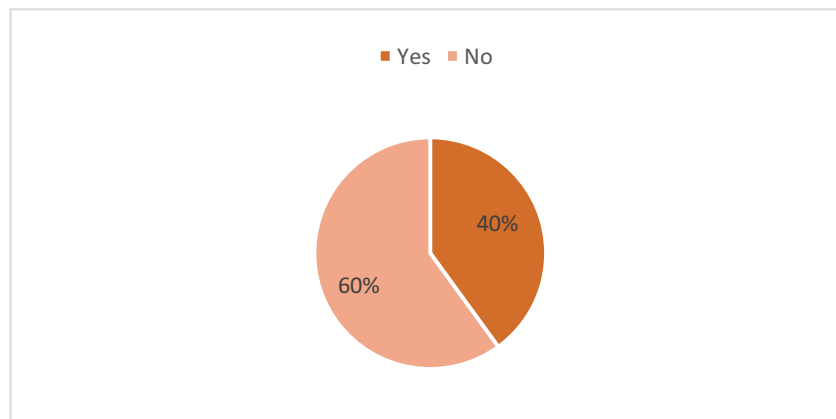


Figure 30 Perception of APN/RJ, does APN/RJ has enough personal trained

5.3.7 Perception of the community around RPPNs

All of the RPPN owners said that they consider that the RPPN have benefited their neighbors; although, six of ten owners said the community did not participate in the process of creation, and did not get any support from its neighbors in the community. One of the owners considers he has affected the personal interest of their neighbors with the creation of his RPPN.

5.3.8 Knowledge of the legal process and legal problems

None of the owners had a problem with the property title at the moment of starting the process of creation of RPPN, but some cases of have changed with the new

CAR process. They all now that a municipal law exists to establish these areas but only 60 % have read it, and 30 % do not think it is clear enough. They would like to change some parts of the law, to get more benefits from the incentives. 90 % of the owners said that they have problems with the hunting and harvesting of endangered species, and they say that it is really challenging to get the municipal guard to help them to defend the area from these illegal activities.

5.4 Owners' perception in the whole state (internet survey)

From the twenty-four, nineteen persons were males and five of them females (Figure 31), two were between 18 and 29 years old, one between 30 and 40 years old, one more between 41 and 50 years old, ten were between 51 and 65 and ten were older than 66 years old (Figure 32).

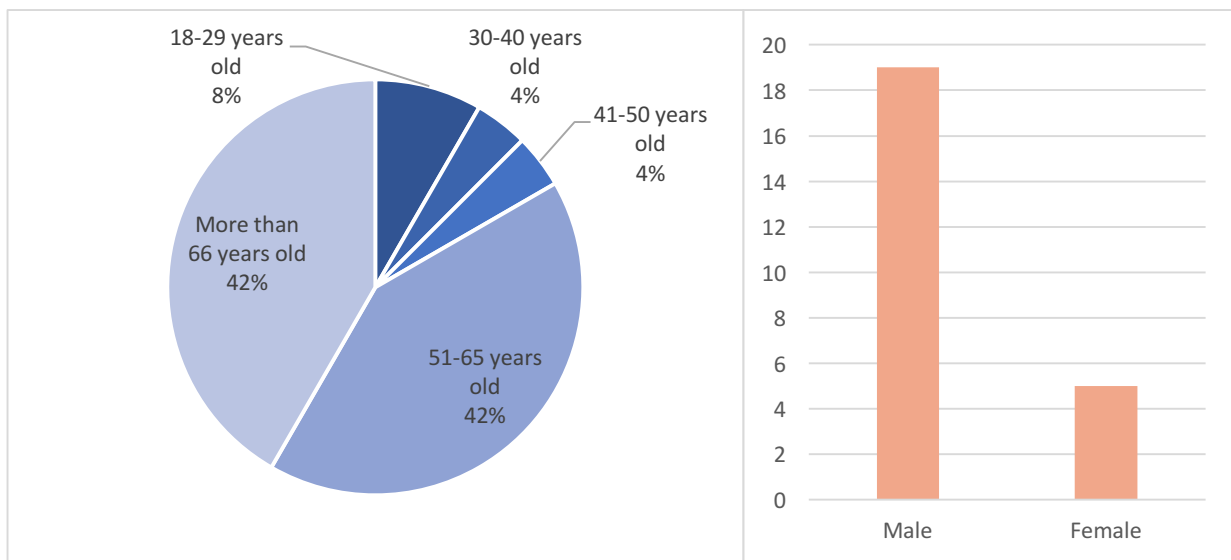


Figure 32 Age of the owners

Figure 31 Gender of the owners

The owners were one from the municipality of Mendes, two from Nova Friburgo, one from Paracambi, two from Petropolis, one from Porciuncula, two from Resende, one from Rio de Janeiro, one from Santa Maria Madalena, one from São José do Vale do Rio Preto, three from Silva Jardim and nine from Varre Sai (Figure 34). From there one was a federal RPPN, seventeen were state RPPN and six were municipal RPPN (Figure 33).

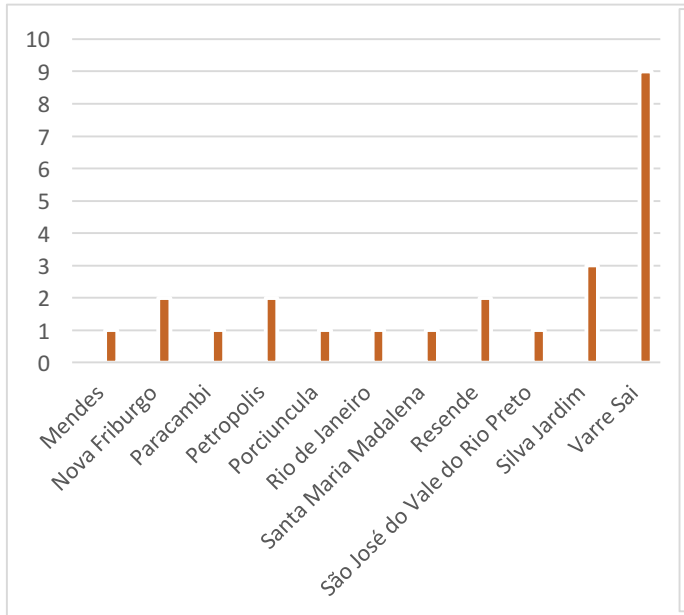


Figure 33 Establishment places of RPPNs

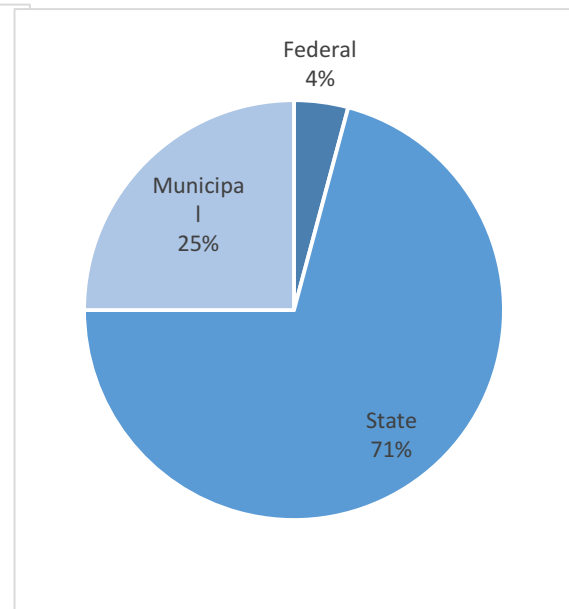


Figure 34 RPPNs protected under the law

Since they started the process of creation by signing the petition to become RPPN, until they received the accreditation of RPPN and registered into the public notary, the time that it took was; for three owners less than one year, for eight owners one year, for five owners, between one and two years, for four owners, two years, for two owners was two to three years, and for two owners more than three years (Figure 36).

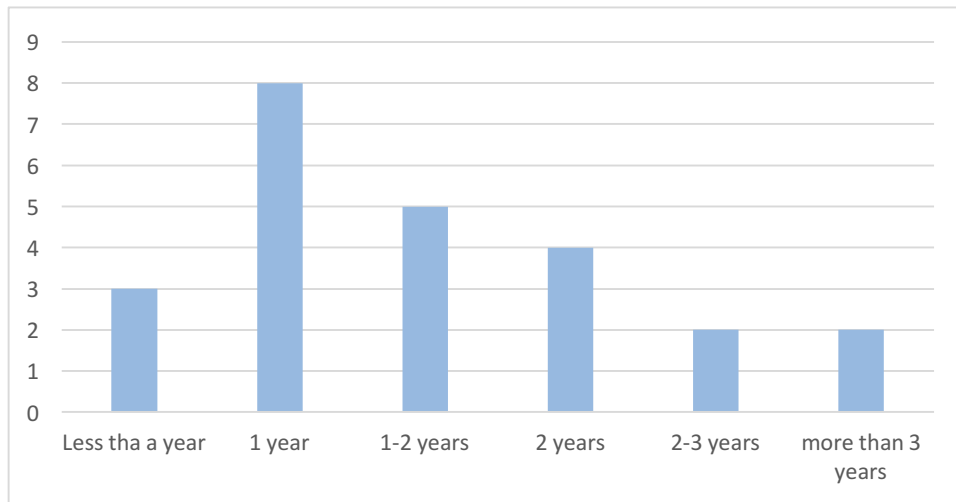


Figure 35 Time used to establish RPPNs

Twenty-one are registered into the CAR, three of them are not (Figure 37). Sixteen as Permanent Protection Area and five as legal Reserve (Figure 36).

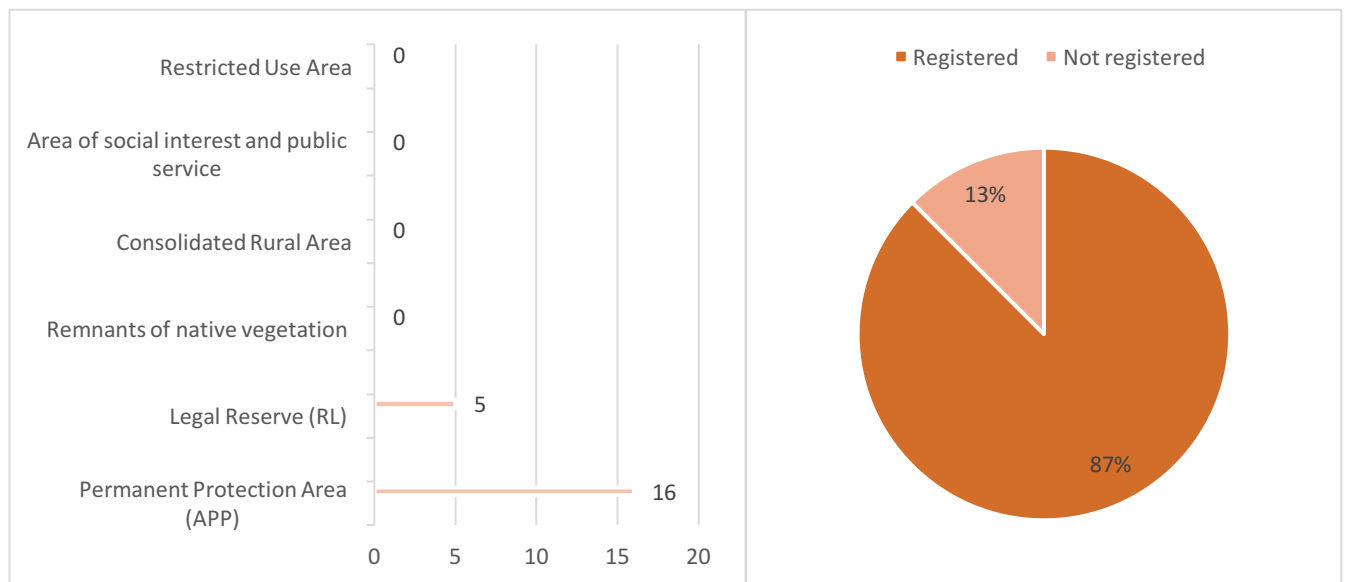


Figure 37 CAR's registration category

Figure 36 Percentage of owners registered in the CAR

In the different municipalities, the owners had different motives for creating their RPPN. Twenty-one of them said that the environmental conservation was their motive, one answered that the governmental incentives was the motive, three of them said it was because of moral obligation, one of them said it was because he

thinks the landscape was beautiful, two said, that the land has a historic interest and six of them said it was because it was in their families best interest (Figure 38).

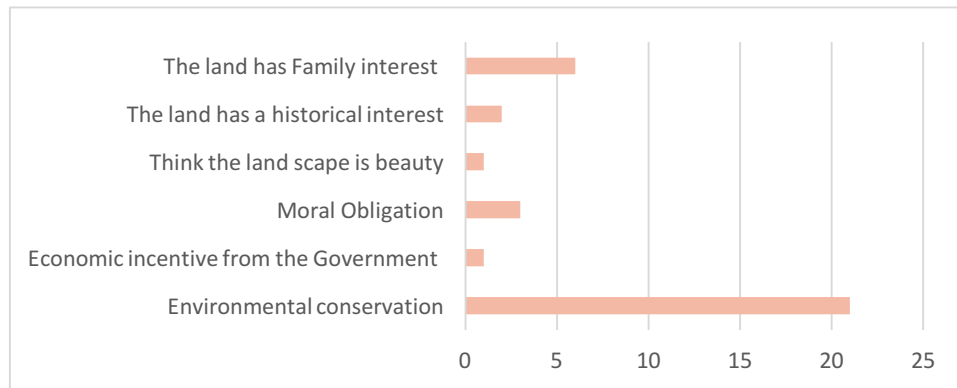


Figure 38 Motive to create RPPNs

They were asked, if they received an incentive from the Green ICMS. Eighteen said they do not received, and six do receive. From those six, all of them receive between 25 and 30 Reals per hectare. Furthermore, they were asked if they receive payment for environmental services, from the 24 only one receives it.

Moreover, 14 of the owners said they did not know about any municipal programs to establish more RPPN in their municipality, while ten owners said that they knew about the programs.

Also, 13 owners said that they think the RPPN federal, state, or municipal law is clear enough, so everybody can understand it, while eleven said it was not; additionally, some of them expressed what they would change in the law to facilitated the process of establishing more RPPNs; some of the answers were:

- "Decrease bureaucracy in the registry offices."
- "Serious, consistent and up-to-date payment for environmental services."
- "The creation of the RPPN could be through simple form. The management plan could also be through a simplified form."
- "Restrictions on the use of the area are too many. There should be greater ease of fruit collection, for example."
- "It would ease bureaucracy and demands."

- "It would not change the legislation, but less bureaucratic procedures for the creation of the RPPN's."
- "Enabling records, obtaining documents referencing services, would ease the creation."

Additionally, most of the owners (16) said that APN/RJ does not help in any way in the process of creation of more RPPNs in their municipalities, and eight said that in their municipalities, they do help.

Finally, they expressed that the most difficult parts of the process of creation of a RPPN are. Ten of the owners said it is the bureaucracy, six of them said there is not enough information about RPPNs, four of them said that there are a lot of requirements to fulfill, one of them said that the governmental staff is not well-trained, and eight of the owners expressed that it was not difficult to establish their RPPNs (Figure 39).

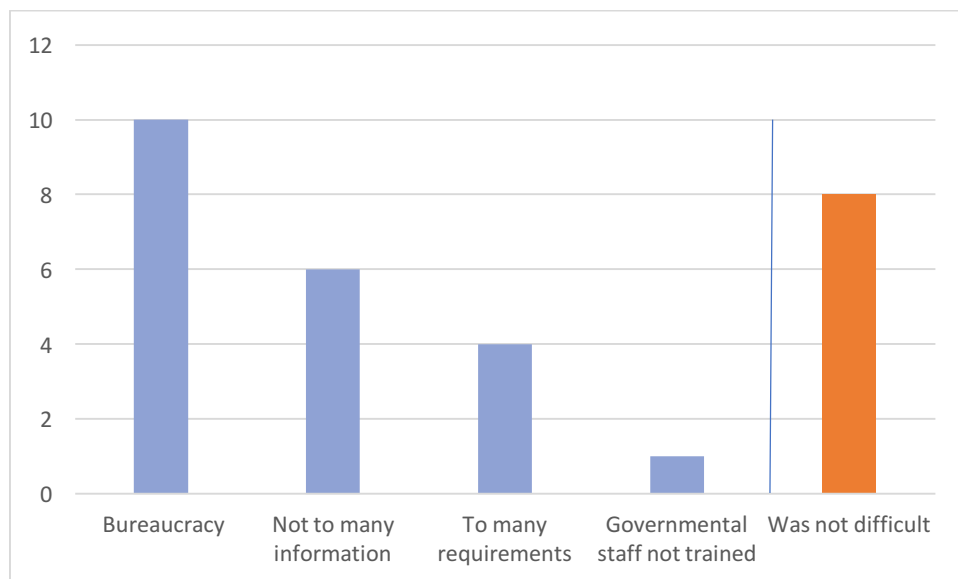


Figure 39 Difficulties to establish RPPNs

5.5 Municipal environmental decision makers' perception

The decision makers (DM) interviewed are people that work at the municipal environmental institutions, as the municipal secretary of environment, the municipal council of environment, personal from EMATER or municipal council members. From the fifteen interviewed, 14 were males and one was female (figure 41), two of them aged between 18 and 29 years old, two between 30 and 45 years old, ten between 46 and 60 years old, and one more than 61 years old (figure 40).

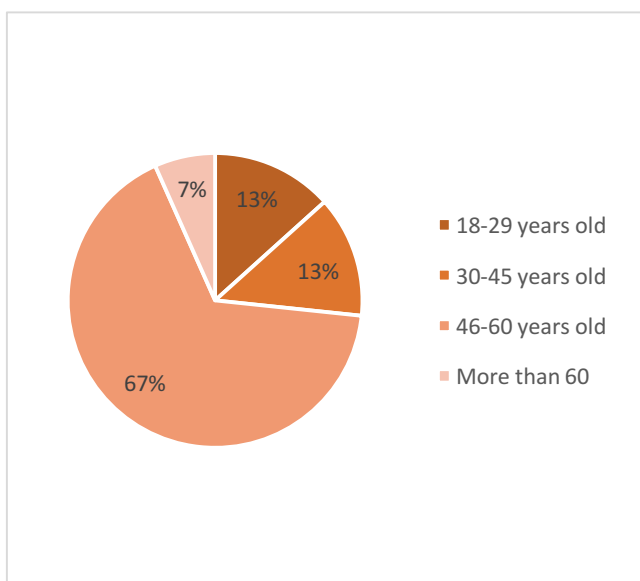


Figure 41 Age of the decision makers

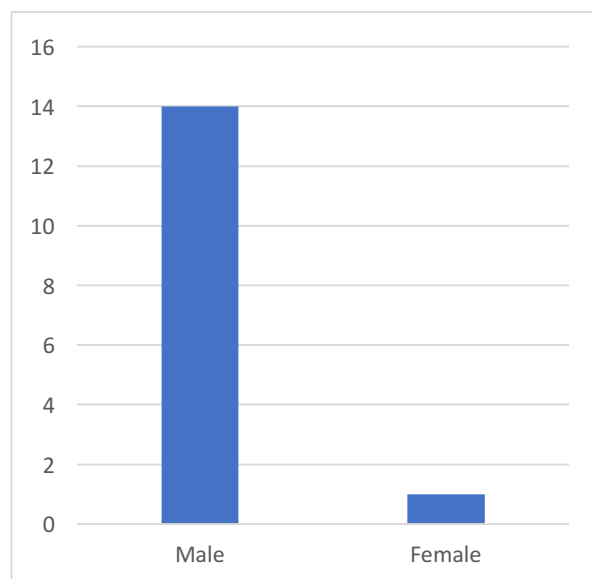


Figure 40 Gender of the decision makers

All the DM interviewed were from different municipalities, the municipalities that answered the survey were: Barra do Piraí, Cantagalo, Cordeiro, Duas Barras, Macuco, Maricá, Mendes, Nova Friburgo, Nova Iguaçu, Praíba do Sul, Porciuncula, Resende, Sao Gonçalo, Trajano de Moraes and Varre Sai.

The majority (14 DM) knew what a RPPN was, from the 15, nine knew of presences of RPPNs in their municipalities, 6 of them knew that they did not have RPPNs in

their municipality, and 1 did not know if there was an RPPN in his municipality. Two of the leaders knew about the existences of a municipal RPPN law in their municipality, 7 were sure about the inexistences of a law, and 6 did not know if there was a municipal RPPN law or not in their municipalities (Figure 42). Since 15 did not know or where not sure about the existences of a law, 2 said that in their municipality a discussion was taken into the municipal council about the creation of a law, meanwhile the other 13 were not sure if a discussion took place in their municipal councils (Figure 43).

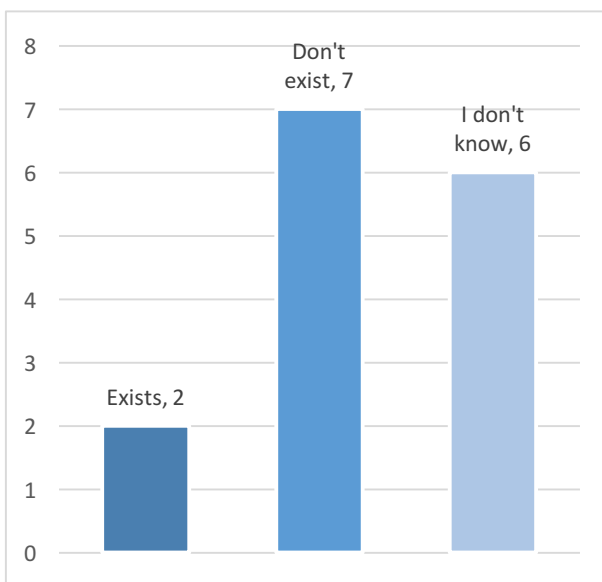


Figure 43 Knowledge of municipal law existence

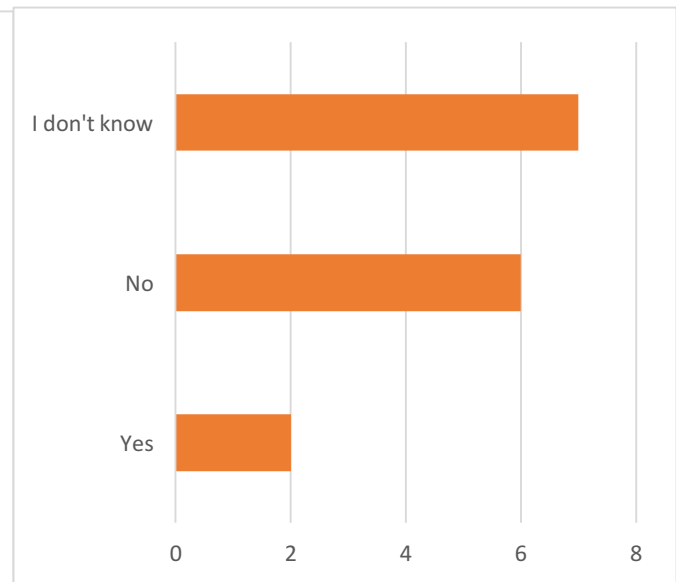


Figure 42 Discussion of the RPPN law in the municipal council

The DM were also asked about their knowledge about, environmental, economic and administrative benefits of having RPPN in their municipalities. Eleven knew at least of one benefit, and 4 did not know of any (figure 45A). Similarly, the leaders were asked about the Green ICMS incentive received by the municipalities with conservation units, 13 new about the incentive, and 2 did not know about it (Figure 45B).

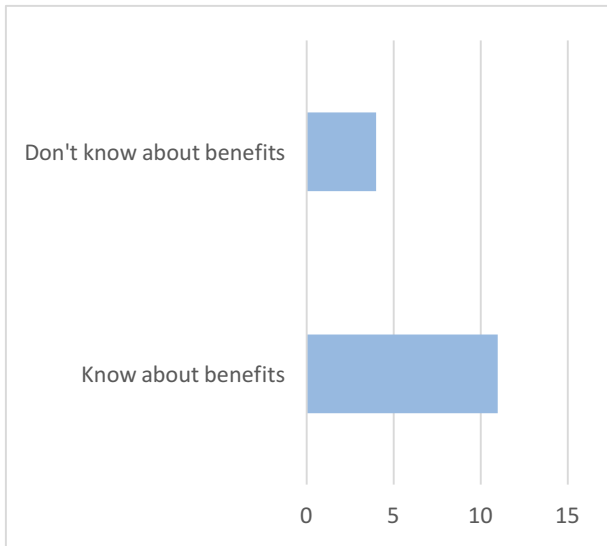


Figure 45 Knowledge of the RPPN benefits

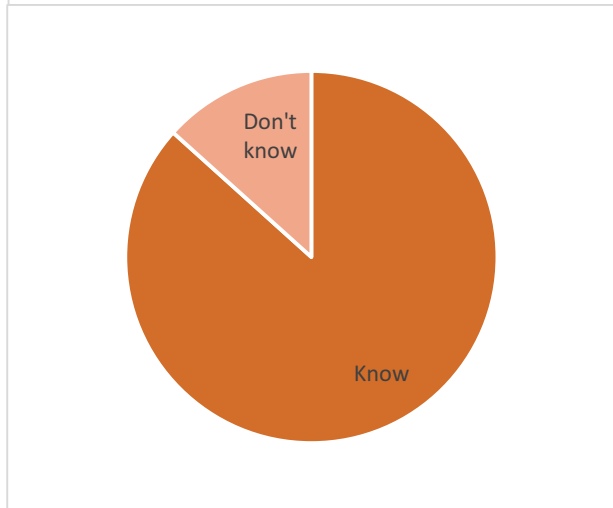


Figure 44 Knowledge of Green ICMS

Finally, the majority thought that the municipality has enough infrastructure and staff to support the creation of municipal RPPN, while four of them said that the municipality is not ready to establish RPPNs (figure 46). Nevertheless, all of them would like to have orientation to create RPPNs in their municipalities (Figure 47).

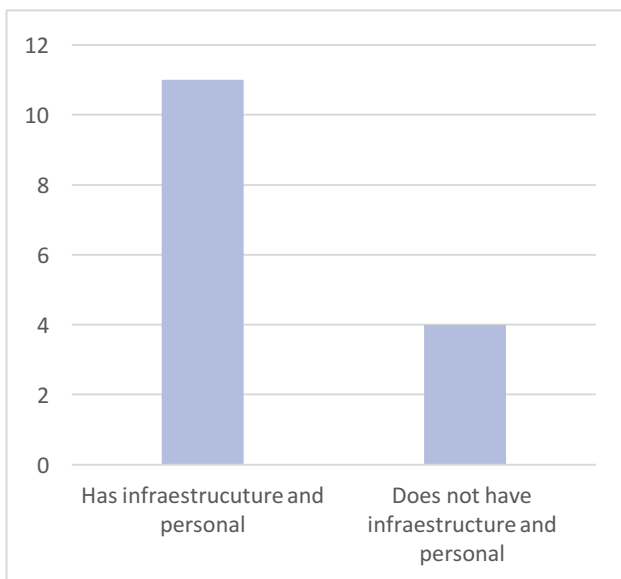


Figure 46 Municipal Infrastructure and staff

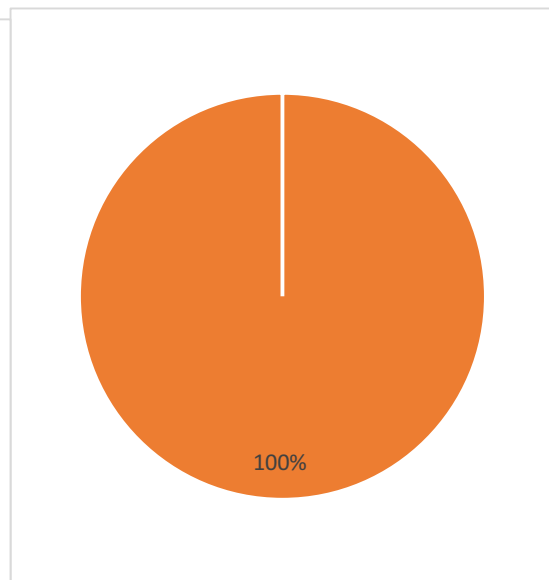


Figure 47 Orientation to create RPPNs

5.6 Experts Survey

The survey was applied to experts in the topic of RPPN in the state of Rio de Janeiro, Roberta Guagliardi, INEA chief of RPPNs, Manoel Duarte, EMATER extensionist Varre Sai, Monica Fonseca, SOS Mata Atlântica, RPPN incentive program and Deise Moreira, Former head of APN/RJ even though, there was a semi-structured interview, and the interviews were taken to learn of the problems and future of the RPPNs at that moment.

In the following the main aspects of the interviews are summarized.

For Roberta Guagliardi, the creation of RPPN is not an easy task, the whole process of creation, is not only about completing the requirements established by the law. Among come of the issues are specific costs, which can be high, for owners who wish to make their property an RPPN, but also to fulfill the aspects of biodiversity in the area proposed to become a protected area. In her experience, she has found people who have a land and they want to become an RPPN, but the land does not have the biological characteristics to be considered a biologically relevant area.

There are many things to think about when you want to create an RPPN, and the municipalities do not always have the resources to establish and manage the municipal RPPN; hence, INEA has the resources and a staff of specialists that can help municipalities in the process of creation and the expenses of the process of creation. The command of RPPN in INEA is a program that has resources from the Environmental Compensation Camera Fund (ECC), and every two years the program has to be renewed to let the program continue.

The best way that the municipalities can help themselves, is by creating a municipal law that allows them hand over the Green ICMS incentives to the owners, and cares about another incentive as the exemption of IPTU (*Guagliardi, 2017*).

The UC size and the conservation strategy of an RPPN, makes them a tremendous example of conservation unit, but in the State of Rio de Janeiro sometimes the politics and the policies are mixed. The state is in an economic crisis, and therefore, the objectives of conservation are difficult to achieve. “We have to make sure that in the state is prioritized the establishment of RPPN with its legal and environmental requirement is prioritized and not only RPPN in the paper that allows the municipal governments obtain the Green ICMS from the state” (*Guagliardi,2017*).

Manoel Duarte, EMATER rural extensionist, has facilitated the creation of municipal RPPN in the Municipality of Varre Sai, during the last eight years, in his point of view, the process of establishment is expensive for the rural owners, the topographic georeference is expensive enough, so most of the owners who would like to create a RPPN have to step back or ask for help to NGO or the municipality to help pay for the expenses.

The municipality of Varre Sai, supports the owners who would like to establish a RPPN, through the municipality govern the owners can request help from an NGO to hire a topographer, to do the topographic georeference on the same dates for a lower price. *E.g.* by reaching fund from SOS Mata Atlântica, only in 2010 they created seven municipal RPPN (*Duarte,2017*).

Manoel was asked for the benefits of the municipal RPPN against the state RPPN, he answered “For the rural owners it is easy to have a known face that can help them during the process and is also easier when the process is done in a municipality, it makes it a lot faster” Manoel Duarte (2017).

Monica Fonseca, SOS Mata Atlântica RPPN head, said that, SOS Mata Atlântica Foundation created a program in 2015 to support the municipal conservation units that intend to support the creation and implementation of Municipal Conservation Units (UCs) in the country. She said that “With the objective to encourage cities to strengthen the environmental management of their territories by investing in planning

and implementing measures to ensure the protection and sustainable use of the environment.”

At the moment, SOS Mata Atlántica is working with 24 projects of municipal governments and non-governmental organizations supported by working in partnership with municipal governments. The municipalities involved, were called for a proposal, where the interested parties sent their proposals and went through a committee evaluation, the committee then selected the best and most suitable. After selection, the donation of resources for the implementation of the project was made.

When asked about the different relationships with the federal, state, and municipal authorities, she said: “It depend a lot on the type of project and partnership signed with the public entity. We have projects with some states that work very well, projects are executed quickly and efficiently reach the proposed objectives. It all depends very much on whether or not the political moment is favorable to the actions and the same can happen with the federal sphere. In the municipalities, there is still not much experience, but I believe that follow the same trend”

5.7 Documented analysis from Mexican proposal of Private Protected Areas

The National Commission for Natural Protected Areas (CONAMP) directs its efforts of ecological conservation in two slopes at national level. The first of them, the protected natural areas decreed; these are terrestrial or aquatic portions of the national territory representative of the various ecosystems, where the original environment has not been essentially altered and which produce ecological benefits that are increasingly recognized and valued (CONANP,2017).

The protected areas are created through a presidential decree or through the certification of an area whose owners decide to devote to conservation and the activities that can be carried out in them are established in accordance with the General Law of Ecological Equilibrium and Environmental Protection, and its

Regulations, the ecological management programs and the respective management programs (CONANP, 2017), among which are:

- Biosphere Reserves
- National Park
- Natural Monument
- Areas of Protection of Natural Resources
- Areas of Protection of Flora and Fauna
- Shrines

The second kind of protected areas are the Certified areas; these are a mechanism of conservation complementary to the protected areas by decree, helping the landowners to establish, and manage their own Natural Protected Areas, these are:

- Areas Voluntarily Destined for Conservation (ADVP)

Currently, there are 369 certified areas in 20 states of Mexico, protecting more than 399,466.36 hectares, 0.2% of the national territory, involving the participation of different sectors of society, including 11 ethnic groups, and 78,674 individuals (CONANP, 2017).

From 2008, the Areas Voluntarily Destined for Conservation (AVDC) allow landowners to apply to the Federal Government for a decree that favors their ownership with a title of Protected Natural Area (CONANP,2017).

Some of the benefits of becoming a AVDC are:

Both the holders and providers of supports or services are significantly redeemed from these areas in different ways.

1.- Federal Government grants a treatment similar to the federal natural protected area so any third-party project that affects the state of conservation, will have to be compensated.

- 2.- For some indigenous communities it means obtaining a document that protects the integrity of their ecosystems for up to 99 years.
- 3.- They are settled an end to the lands, reason why the owners of the AVDC cannot leave their land in helplessness or in idle form.
- 4.-ADVC can be attributed to productive activity, so that their land can be used in agricultural, livestock, forestry, eco-tourism, etc.
- 5.- They can receive from non-governmental inter-institutional, donations, same donors that can obtain fiscal receipts of these processes.
- 6.- ADVC are subject to incentives from the Temporary Employment Program (PET) and the Conservation Program for Sustainable Development (PROCOCODES).
- 7.- The benefits are summarized in the deduction of 100% of expenses and verifiable investments in the establishment and management of areas destined voluntarily to the conservation (De la Maza et al., n.d.).

6 Discussion

6.1 Difficulties during the research

The research had to be adjusted several times to the conditions in the study area, including the change of research question in this process. At the beginning one of the aims was, to analyze environmental institutions of the municipalities of Varre Sai and Porciuncula, in charge of the creation of RPPNs, their organization, infrastructure, financing, community participation, interinstitutional support, bureaucracy, infrastructure for development, etc., topics derived from Cifuentes A et al., (2000). Such institutions do exist, but they are not completely functional, taking in to account that the two environmental institutions only have between 4 and 2 staff members, in order to take care not only about the process of creation and management of RPPNs but are responsible for all the environmental municipal tasks; consequently, the analysis was not carried on.

Some other difficulties were:

- The difficulty to obtain the municipal laws; in some municipalities, they are not available in internet, and the only way to acquire it, is by personal contact to the municipal environment secretary, once was attended the request to send the law by digital or print form, it was need it to wait for the laws, in some cases for two weeks, also in some other cases, the request was never answer.
- The lack of participation by the decision makers in the specific case of the survey send by email to the 92 municipal environmental secretaries.
- The lack of information about RPPNs in the municipalities (see figure 40).

6.2 Method discussion

As, it was done during the research, the comparative law involves the evaluation of at least two laws between each other and from the same branch. Morán, (2002) explains, when the comparative methodology is used as a tool to find gaps or to solve a problem in the legal system, it would be an emphasis on the common legal core.

Thus, the analysis was also made taking in consideration the perception of the owners, and of the decision makers for environmental actions in the municipalities and the experts survey, in order to complement what is established in the law with the social, legal and political reality of the municipalities, taking in to consideration their necessities and experiences in the establishment process of RPPN. Rabel (1967) express two key concepts: functioning and context, without one or another, it is not possible to compare legal systems. The functioning means that the comparative will not be taken to the end if one ignores the cultural, economic and legal context of a given society.

The methodology developed helped not only to understand the law, and the procedure of the law, but, to take into consideration the reality of the stakeholders, which allows us to consider different perspectives from the socio-legal point of view(quote).

And, by understanding that the legislative and law-making process is continuously, in which a law is created, applied and reviewed, with the premise that the law is not static, but a phenomenon of adaptation to the society changes.

6.3 Comparison of the law

As shown by Pinto et al., (2017), all the municipal UC were created by law or decrees: 51,4 % were created through a law, and 47,6 % by municipal decree. It is

to made remarkable that some laws fitted almost in total in to the main components, in particular the law of Varre Sai and of Porciuncula which have almost similar main components. Other laws, did not fit as neatly in to the main components, these laws, demonstrated specific achievements in the respective municipality. E.g. in to the law from Rio Claro: one article made of the law allows the exceptions that also highly degraded areas can become a protected area, if it is committed to restauration and if the degraded area is in the Tiguana-Bocaina Corridor. Another example is the decree 147/2015 from Nova Friburgo, were the it commit the governmental institutions to help the owners in the process of creation and management of their RPPNs.

It is not about which municipality has more rules, but about which rules help facilitate the process of creation and management of RPPNs for the governmental institutions. Instead of thinking about the lack of laws and regulations, the comparison carried out can be an approach to create one single format of RPPN law that every municipality can use, but can be adapted to the circumstances of their own municipality, taking the examples shown.

6.3.1 The law 572/2010

Known as the Green ICMS law for RPPN owners, the complementary law, specifies the process of distribution of the Green ICMS for the RPPN owners in the municipality of Varre Sai, which is one of the municipalities in the State of Rio de Janeiro that has this procedure, that helps the owners to collect their incentive, through APN/RJ that facilitates this process. Therefore, the law becomes a functional system of incentive delivery, as long as all of the specifications that the law shows are covered (Mendo et al., 2006).

It is important to have a clear link between the municipalities and the owners, through the civil associations or the environmental city council, so that the use of Ecological ICMS resources has another measure to be fair and transparent.

In the year of 2015 the Civil Association APN/RJ accredited to deliver the incentive money, terminated with their legal status as an association for the state of Rio de Janeiro. Consequently, from that year and to date the owners of RPPN who were registered in the association were left without the possibility of obtaining the incentive they are entitled to (*Moreira, 2017*). To date, the association is seeking to reobtain its registration before the state of Rio de Janeiro, to return to its current functions in the municipality of Varre Sai. Nevertheless, the law establishes an article, in which, the owner that is not registered in any association could receive their annual incentive. This does not mean the owners not register in to APN/RJ are in a better position than the ones that are registered in Swift, B., & Bass, S. (2003). expressed that no other stakeholder understands the subject of RPPNs in Brazil than the Civil Associations and NGOs.

As Guagliardi (2017) said, it is really important that the municipalities develop a guideline or a law, that allows the distribution of the incentives to the RPPN owners. The distribution of the Green ICMS incentive has helped the RPPN owners in the municipality of Varre Sai, in the management of the RPPN. Taking consideration that this law also specifies the fixed percentage of amount that will be given to the owners of RPPNs. Therefore, the creation of a law or guideline to distribute the Green ICMS incentive to the owners could help as a motivation to the owners to establish RPPNs, and it should include not only the municipal RPPN owners but, federal and state RPPN owners.

6.4 Green ICMS: Problem or solution

For some of the experts, the municipal RPPNs are created just so the municipalities can have access to the Green ICMS budget, putting aside the correct process of establishment and the correct management in the RPPNs. Also, Cegana et al., (2007) says that motive for the creation of municipal RPPNs is the Green ICMS. Correspondingly, Mendo et al., (2006) found, that the RPPNs contributed to the ICMS budget because the value for the municipalities is calculated in the size and number of the UCs established in the municipality.

At any case, it was also found for , Pinto et al., (2017) the impact of the Green ICMS in the establishment process and implementation of municipal RPPNs, well-structured and monitored, integrating it with some other financial mechanisms, can provide an improvement for the protection in the municipalities.

Moreover, Guzman (2016) also found, that for most owners the main motive of creation was principally the environmental conservation, but some of them have stated that one motive is also the Green ICMS incentive. At any case, the impact of the Green ICMS in the establishment process and implementation of municipal RPPNs, well-structured and monitored, integrating it with some other financial mechanisms, can provide an advantage for the consolidation of the protection in the Atlantic Forest (Pinto et al., 2017). Also, the Final Environmental Conservation Index (IFCA), provides the opportunity of adjustment and support to the municipalities and is every year recalculated, so the incentive can grow every year (Pinto et al., 2017).

The municipality has a duty of care the Green ICMS, with the responsibility to the correctly establishment of RPPNs accordingly to the law and in the correct use and distribution of the Green ICMS incentive to the owners. Thus, the Green ICMS incentive, should be monitored by the environmental municipal council, and the process of creation of RPPN should be also monitored by a private or public educational institution, in order to ensure a best procedure.

6.5 Owners institutional perception of the law

The perception of the RPPN owners about the knowledge and enforcement of the law in civil or criminal liability was well-known to some of them. Most of the owners, think that some changes should be made in the law. One of the main problems in the environmental law subject is the poor enforcement of the law Swift, B., & Bass, S. (2003). Between the most often comments expressed were: the knowledge and clarity of the law, the application of a decrease of bureaucracy and the facilitation of the requirements of the procedure during the creation process to facilitate the

establishment of RPPN. They also talk about the importance of “Serious, consistent and up-to-date payment for environmental services”.

The law has to be custom-made for every municipality, as we could see, most of the RPPN owners (90 %) from Varre Sai and Porciuncula had problems with illegal hunters and commercial plant collectors. The law talked about the civil and criminal liability, the same should be for every respective municipality, find their peculiarities and customized it for the municipality.

The importance of the knowledge about current events supports the decision making for the municipalities. The data exposed does not mean they are prepared or not to make a decision about the establishment of RPPNs, but should encourage the responsibility in the municipalities with the RPPN establishment intention, since, all of the leaders were interested in having counseling about the RPPN process of creation and establishment.

6.6 State or municipal RPPN: Expenses and conservation

The discussion of which kind of RPPN is preferable for the owners, facilitating the process of creation: municipal or state, lead to the debate of their differences and their similarities, and the principal points to discuss are the expenses and conservation. Pinto et al., (2017) found, that the municipal RPPN are not too different from the federal or state UCs from the obvious problems they all have related to indefinite political instability, land situation, deficiency of technical personnel and financial resources, and the absence of management plans, among others. While, the municipal RPPN are faster to create, represented in the time expended in the process of creation, (Figure 25) and the bureaucracy problems expressed by Guzman (2016). Municipal RPPN take less time than the state RPPNs during the process of creation, but, the technical inspection process done by the municipality, is in doubt by some of the experts, because of their budget and staff limits (Guagliardi, 2017). Also, the municipal RPPN expenses during the process of establishment, have to be fulfilled by its owners with the assistance of ONGs or the

municipal government (*Duarte, 2017, Guagliardi, 2017*). The municipalities have greater limitation for the efficient management of their territory and their CU. Besides the list of needs and demands, political and budgetary weakness, technical criteria is scarce, and human resources are deficient (*Swift, B and Bass, S., 2003*), *Pinto et al., 2017*). Same expenses and human resources that can be acquired by the INEA in the state of Rio de Janeiro (*Guagliardi, 2017*).

6.7 Intra and Inter Institutional networking

Intra- and interinstitutional networking to accomplish the different goals of an RPPN should exist, in the different steps of the establishment and management of the RPPN. To implement good conservation tasks, the intra-institutional support is reflected in the organization and exchange of experiences, and conservation and management laws and policies are a reflection of the inter-institutional support of protected natural areas (*Cifuentes A et al., 2000*). The actual regulation of RPPN, does not promote the networking between the governmental stations, far less, the co-working with private associations as ONG or civil associations. If the gap in the municipal process is the capital and the assurance of the technical inspection and the gap in the federal or state process is the bureaucracy and the remoteness from the owners, then a solution should be found.

One idea to solve the problem could be, a civil association, contract by the government installed in closer regional spots, to support in all moment, not only the municipal RPPNs, but, the federal and state RPPNs. The expenses could be shared between the three governmental levels, or by a private association. Other, is to delegate some part of the process to EMATER, in order to help, all kind of RPPNs.

6.8 Economic and political crisis in the state and financial funding

The political crisis in Brazil and the economic and political crisis in the state of Rio de Janeiro, is causing operational difficulties in different government institutions. Brazil is experiencing a complex economic and political development, with the

impeachment of the president-elect Dilma Rousseff and the establishment of a government headed by Michel Temer, and with a world economic crisis since 2008 (Mancebo, 2017). The governmental institutions are exposed; some environmental governmental institutions in the state did not have economic resources to pay the bills of the bureau where they were working, and the salary of some officials had not been paid for the last three months, consequently, it is obvious that the consequences of the crisis have reached the institutions and the process of conservation in the state of Rio de Janeiro. And also, at some not proven point, it could reach the Green ICMS tax and some other incentives that the municipalities could collect.

The ECC fund support the INEA's RPPN staff, but could be also used to support directly the creation of municipal RPPNs; E.g. a new municipal staff member paid by this fund and with the objectives to perform the creation and management task for RPPNs.

One opportunity to assist the creation of more RPPNs in the state could be the private opportunities to support the RPPN owners with the help of public policies that suits the two parties and the creation of more financial public and private funding for the creation and management of the RPPN. E.g. a company that pays the management plan for an RPPN owner, should be exempted from some tax payment.

6.9 Experiences from private protected areas in Mexico

The Areas Voluntarily Destined for Conservation (AVDCs) are the private protected areas strategy in Mexico. Some of the differences between RPPN and AVDC are the type of status, whereas, in Brazil, the status is *ad Perpetua* or unlimited, in Mexico the duration of the accreditation is for 99 years. The owners of VDCA cannot leave the land defenselessness, or in indolent form, e.g. the owners should be aware of the conservation activities of their land at all time, while, the owners of RPPN can even sell the RPPN property to another party, if the land is sold, it will always continue with the status of RPPN. Also, the RPPN is in the SNUC's integrated

Discussion and Conclusion

protection group, where activities are restricted, the VDCAs can be used for productive activities, so that their land can be used in agricultural, forestry, ecotourism activities, etc. The benefits are the exception of the Tax over the Rent (ISR acronym in Spanish), the same as the Rural Territorial Property Tax (ITR) in Brazil, they have also some benefits from programs as the Fiscal Stimulus Program, and in Mexico, the enterprise that gives resources to conservation unit, is exempt for paying taxes (CONANP, 2017). The comparison made, showed that even in Mexico, with a respectable strategy as Brazil, in Latin America, there is no other country that has more private protected areas than Brazil (Swift, B., & Bass, S. 2003).

7 Guideline of the Law

Introduction

According to the State Constitution of Rio de Janeiro, the municipalities of this state, have the freedom to create their laws, when that would does not contravene another federal or state law. Since the 2000, with the promulgation of Law 9.985 the SNUC was created and with it, the Natural Heritage Private Reserves (RPPN) became a conservation unit (UC), in the sustainable use group. The RPPN can be created as a federal, state or municipal unit of conservation. The municipalities, should have a law that outline the aims and the path to achieve this objective. This guideline has the objective to promote municipal secretaries of environment to improve their strategies for RPPN establishment in the municipalities of the state of Rio de Janeiro.

This guideline could be used for any municipal stakeholder or decision maker that would like to start the process of creation of a municipal RPPN law.

Who can create the law?

The municipalities along their city councils as a municipal decree or a law.

Which are some of the benefits of the creation of an RPPN?

There are many benefits within the creation of RPPNs for the municipalities, some of them are: the enlargement of forest land, the increased connectivity along the municipality, and in the long run, in Atlantic Forest (green corridors), stabilization or even increase of biodiversity in the municipality, and in the long run, in Atlântic Forest. Also, other economic incentives as the increase of the Green ICMS for the municipalities to use it for RPPN management activities.

What do you need before the creation of an RPPN law?

Municipal Expenses

The creation of RPPNs can be costly for municipalities and even for the owner, the future expenses in some parts of the process of creation have to be well calculated

before the process starts, or even the law is published. Some of the expenses for the owners are the topographic georeference, the technical inspection and the public notary registry. In the part of the creation, and in the part of the management, the creation of the management plan. Expenses for the municipality would be, a staff that should take care of the RPPNs, it could be a part time or full-time job, and they should be expertise in the subject. If a complete staff is difficult to achieve, it is recommended, to have at least one expert that could fulfill most of the tasks, as part of the municipal staff.

Staff

A completed team should be integrated with: biologists, geographers, environmental managers, and environmental lawyers. In some cases, these experts are contracted for the specific parts of the process.

Material resources

The staff has to have at least the basic material resources to bring about the topographic work and the technical inspection.

Who can create an RPPN?

Any land owner, (person, ONG or company) with the interest to turn their area in to an RPPN.

Which is the main body that this kind of RPPN law should have?

1. The justification: It is recommendable to start reflecting laws the on which the new law is based.
 - a. In this case, the justification should be in the Conservation Units National System (SNUC) Law 9985/2000.

Within the justification, it is also good to give some definitions that could help the reader understand it.

- a. definition of an RPPN for the municipality.

2. The objective of the law: it is always good to establish a specific objective of law, for this law, some objectives could be:
 - a. Protection of the environmental resources
 - b. Conservation of the biological diversity, particularly the Mata Atlântica biodiversity
 - c. Conservation of Water resource quality

3. Institution in charge: It is suitable to establish from the beginning which governmental institution would be in charge of the process of creation and management of the RPPN. Some municipal institutions could be:
 - a. Environmental Secretary: in some municipalities as Varre Sai or Porciuncula, the municipal environmental secretary is the institution in charge. In the case of Varre Sai, the secretary is not able to do all the tasks; the support of institutions as EMATER or APN/RJ facilitates the process of creation.
 - b. A civil association or ONG: There is no antecedent of civil associations with this responsibilities in the municipalities, but there are some antecedents of RPPNs associations supporting projects in the municipalities. Other option could be that the municipality grant some management and creation responsibilities to a civil association.
 - c. The executive power (The mayor): the municipality of Resende, recognized in their RPPN Municipal law, the management and establishment authority in to the executive power; even though, the municipality do not determine which brand of the executive power would be the responsible, it gives the opportunity of the creation of a precise municipal institution for RPPN.

4. Activities to develop: In the law, it is important to describe the activities that can be developed inside the protected area, by supremacy of law the only activities that can be carried out are:

- a. Scientific
- b. Cultural
- c. Education
- d. Recreation
- e. Tourism

5. Commitment to recovery: The commitment to recovery is an opportunity for owners whose land has been degraded, but still consider to create an RPPN whit it. The law should establish a percentage of degraded land inside the proposed area to become an RPPN as an owner's commitment to recovery; some examples are:

- a. The law of Varre Sai and Porciuncula considers until 30% of degraded area inside the proposed area to become RPPN.
- b. The law of Rio Claro considers until 100% of degraded area inside the proposed area to become RPPN only if the area is in a specific forest corridor.

Also, in some cases it expressed that, if the proposed area is next to an RPPN, it should have preference to become RPPN.

6. The process of creation: Is essential to describe the process of creation of the areas, step by step and clearly, so that reader has no doubt of the process, including the governmental institutions they should refer to and the time taking in every step of the process. The basic process could be the next (INEA,2017):

- a. Personal requirement of RPPN creation: this procedure is made by the owner, it is a document signed by the requesting owner, in order to start the process of evaluation of the land proposed to become an RPPN.
- b. Property title of the land: this procedure is made by the owner, it is an obligation of the owner demonstrate the property of the land proposed to become an RPPN.

- c. Personal identification
- d. Topographic georeference of the land: this procedure is made by the owners, depending on the resolution in the law (*Duarte,2017*). It is important that the government consider the expenses of this activity, since most of the owners say it is one of the biggest obstacles during the creation process. In the municipality of Varre Sai, the SOS Mata Atlântica and APN/RJ support covering part of the expenses of the topographic georeference, through the municipal government (*Duarte, 2017*).
- e. Technical inspection and summary of findings: this procedure is made by the government. A template of the technical inspection could be attached to this law. The summary of findings is also made by the government, the opinion derived from the technical description. It explains the variety of fauna found in the area, and the importance of it. It is also really important to lend a copy of this description to the owners, so they can use it in the management plan. It is also important that the government disposed to create a law, thinks in the possibility to ensure the expenses of this inspection
- f. Approval or disapproval of the application: this procedure is made by the government; the approval of the authority is the part of the process where the authority gives a resolution to the owner.
- g. Registration into the public notary: this procedure is made and paid by the owner, once the approval is given, the owner should have a determined time to register their land in to the public notary as an RPPN, the municipality could also think in a way to support the owner with this expense.
- h. Publishing of the decrees: this procedure is made by the government, this is the last step in the process of creation, and it is published in the municipal official journal.
- i. Benefits to the owners: It is also important to explain the benefits of becoming a RPPN owner, it encourages the disposition to create more

RPPNs; also, it is of utmost importance to establish the process of the administration of the benefits, e.g. law 572/2010 from Varre Sai. Some of the benefits by law that already exist are:

- I. The Green ICMS: in some cases, a percentage of the Green ICMS is specified that will be used to support RPPN creation, and how it would be given to RPPN owners for cost compensation. Besides, some municipalities establish in their laws a strategy with a permanent percentage of Green ICMS that will be given every year to the RPPN owners.
- II. Environmental fund from the municipal council.
- III. The municipal environmental defense
- IV. Discharge of the rural territory property (ITR)
- V. Discharge of the urban property taxation (IPTU)

The municipality could explore whether some of these options for further incentives and benefits for RPPN owners could be applied.

7. Responsibilities and obligations: it is important to determinate the responsibilities and obligations of the owners and of the government. Some of the basic responsibilities are:

- a. Ensure the maintenance of the environment: It is established in some municipal laws, as Nova Friburgo, that government and the owner should work together to achieve the goal of conservation, but in some cases the responsibility is only for the owners. As a recommendation, it should be a responsibility
- b. Submit to the approval of management plan: Also, an activity that has not been reflected in the current municipal RPPNs is the creation of a management plan. The government and the owner should work together to achieve the goal of the management plan, similarly, the expenses should take in to consideration between the government and the owner in order to facilitate the creation of the management plan. The Municipality of Nova Friburgo also established in their RPPN law,

as an obligation, the support from the municipality to the owner in the management plan process of creation.

- c. Carry out a report for the activities and status: As an obligation of the owner, the semester or annual report, should be turned in by the owner to the government. Specification of how this report must be, should be created, e.g. A template of the report could be also attached to the law. It is a recommendation to create a simple format that any owner could full fill without any conservation experience.
- d. Visit the protected area: The government should establish as an obligation the visitation to the protected are in order to verify the report and the process of conservation. As a recommendation, it could be established a method in which civil associations, universities or educational institutions, visit the area and provide a report of the visit.
- e. Assistance: the government should assist with scientific or technical orientation. Also, as a recommendation, it could be established a method in which civil associations, universities or educational institutions, visit the area and provide with orientation.

8. Practice of law: or enforcement of the law, the civil and criminal liability should be considered in the law, when the subject (the RPPN owner or other party) violates the law, as a criminal or civil offense. Some laws have already considered some actions for the offenders, e.g.:

- a. The reduction or exception of taxes may be suspended for subsequent periods in case the owner found responsible.
- b. The payment of an administrative fine.

It is important to ensure the safety of the areas from criminal and civil offenders.

9. Attachments: previous, in this guideline, some attachments have been taken in to consideration, here are exposed here are some other important attachments to the law:

- a. The Requirement of creation of a RPPN.
- b. The Terms of commitment.
- c. Guideline for technical description.

The RPPNs do not have to be municipal RPPNs to secure the Green ICMS incentive for the municipality, the RPPNs could be state or federal RPPNs. The municipality should create a law or regulation to distribute the Green ICMS between all the RPPN owners in the municipality; also, to establish in this law or regulation a fixed percentage of incentive that the owners will have every year. It has been demonstrated that the municipal RPPNs are created in less time than the state or federal RPPNs (Guzman, 2016).

Furthermore, there are NGOs as SOS Mata Atlântica, that could work with municipalities to establish RPPNs and can provide with technical assistance and in some cases with the expenses in the process of creation. Moreover, the expenses could be shared between the three governmental levels, or by a private association.

Also, an opportunity to create a civil association of RPPN owners in the municipalities, could support the process of establishment, management and incentive delivery, through a better communication. Additionally, this association could be integrated as part of the municipal environmental council, and become a participatory partnership with the other members of the council.

Finally, it must be recognized that the RPPNs are not a public unit of conservation, but a private one. It is the will of the owner to guarantee the conservation of forest in their land, and some responsibilities and expenses should be covered by them, consequently, it is also a responsibility of the government to support with all that is necessary to achieve this goal.

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9 Annexes

8.1 Questionnaire for RPPN owners

Name _____ Date _____
 Location _____ Profession _____
 Actual Job _____ Age _____
 Name of RPPN _____
 Gender M__ F__
 Geographic Location latitude _____ longitude _____
 Area _____ km² Municipality _____

By means of this document, it is agreed: Personal data will not be published. Names, addresses, initials or any personal data that derives from this interview will remain in the back and responsibility of the interviewer.

RPPN__ E __ M__ F__

-Administrative (Personal, quality, expertise, level of schooling, appointed time to AP)

-RPPN Characteristic (administrative, legal)

Which is your own definition of RPPN?

Which one was your motivation to create your RPPN?

A conservação ambiental (Environmental conservation)

Pagamento Governo / Incentivos Financeiros do Governo (Economic incentive from the Government)

Obrigaç o (Moral Obligation)

N o sabia o que fazer com sua terra (n o era funcional) (Land was not anymore functional or used)

You thing the landscape is nice (beauty)

The land has a historical interest

The land has Family interest

Outra (another)

Are you registered in the CAR?

Yes

No

If yes, in which Category?

 rea de Prote o Permanente (APP)

Reserva Legal (RL)

Remanescentes de vegeta o nativa (Remnants of native vegetation)

Área rural consolidada (Consolidated Rural Area)

Área de interesse social e de serviço público (Area of social interest and public service)

Área de Uso Restrito (Restricted Use Area)

Outra (Other)

If not ¿Why?

Bureaucracy

Paper work

Taking time

Personal not trained

Ignorance of the subject

Other _____

Do you have a management plan?

Yes

No

Currently working on

If no, why? _____

If yes, did someone help you to create a RPPN? Who?

Confederation/Association

People in the Municipality

Organização não governamental

People from the community

Other _____

-Municipal process of creation evaluation (legal process)

Since when have your documents that accredit you have a RPPN?

Less than 1 year

1 year

1-3 years

4-7 years

7-10

More than 10 years

How long took to have the documents that accredit you have a RPPN?

Less than 1 year

1 year

1-2 years

2-3 years

More than 3 years

Did someone help you to create your RPPN?

Confederation/Association

People in the Municipality

Organização não governamental

No one
People from the community
Other _____

Did someone from the municipality explain you all the process of creation?

Yes

No

Who?

Administrative staff

Expert (lawyer, engineer, biologist, technician) _____

Do the municipality had someone that always answer your questions about the creation process?

Yes

No

Who?

Administrative staff

Expert (lawyer, engineer, biologist, technician) _____

Which documents did the municipality ask you for the creation of the RPPN?

How long it took the document analysis from the municipality?

Less than 3 months

3-6 months

6 to 1 year

more than 1 year

When they came to your land, can you explain, how was the process of reviewing?

Did some expert in conservation review your land? Who?

Engineer

Topographer

Technician in conservation

Biologist

Other _____

Which one where the main difficulties in the creation of RPPNs?

Bureaucracy

Paper work

Taking time

Personal not trained

Ignorance of the subject

Other _____

How often does the municipal staff visit your RPPN?

Every month

Every 2 months

Every 6 months

Once a year

Other _____

-Municipality administration (perception, infrastructure, capacitation, organization)

Do you think the creation depends more in the owner or in the government? Why?

Government

Owner

Why?

Does the municipality have programs to encourage the creation of RPPNs?

Yes

No

Which ones?

Do you think they have the enough infrastructure (cars, computers, tools, offices) to establish more RPPNs?

Yes

No

Why?

Do you think the municipality is prepared to establish more RPPNs?

Yes

No

Why?

Do you think the municipality have trained personal to support the creation of more RPPNs? (engineers, lawyers, biologist, technicians)

Yes

No

Why?

Do you know if there is any Federal or State Support to the municipalities so they can create more RPPNs?

Yes

No

If yes, which support?

-Confederation/Association administration (perception, infrastructure, capacitation, organization)

Are you registered in the Association of RPPNs?

Yes

No

If not, Why?

Do you now if the association have programs to establish more RPPNs?

Yes

No

Which ones?

Do you think the confederation/association have trained personal to support the creation of more RPPNs?

Yes

No

Do you know if the association have enough infrastructure (cars, offices, computers, tools) to help with all the process of creation of more RPPNs?

Yes

No

Why? _____

-Community (support and participation)

Is the community involved in the creation of more RPPNs?

Yes

No

How?

Did you have any kind of support from the community during the creation of your RPPN?

Yes

No

Which one?

Do you consider that your RPPN affected the interest of your neighbors?

Yes

No

Why?

Do you consider that your RPPN brought benefits to the community?

Yes

No
Which ones?

-Financing (perception, extraordinary financing, ability to generate own resources, state economic crisis)

How much money did you invest in the creation of RPPN?

Less than 500 R
500 to 2000 R
2000 to 5000 R
more than 5000 R 15000

Do you have a personal annual budget for the RPPN?

Yes
No
If yes, how much do you keep annually for the RPPN?
Less than 1000 R
1000 to 5000 R
5000 to 10000 R
more than 10000 R

Do you receive any incentive for the creation of RPPN?

Yes
No
Which incentives?
From who?

How often do you receive incentives from the creation of RPPNs?

Every month
Every 2 months
Every 6 months
Every year

Do you have any other source of income for the RPPN?

Yes
No
Which one? _____

Do you have any tax exemptions for creating your RPPN?

Yes
No
Is yes, which one?
IPTU
ITR

Other _____

Do you know which economic activities can you do in your RPPN?

Yes

No

Which ones? _____

Do you have any plan of economic source for your RPPN? (ex. ecotourism)

Yes

No

Which one? _____

Do you think the State is in an economic crisis?

Yes

No

Why?

If yes, do you think that the crisis affect directly the conservation in your RPPN?

Yes

No

Why?

Do you think that the economic crisis affect the process of creation of another municipal RPPNs?

Yes

No

Why?

-Legal (land tenure, applicable laws and regulations, clarity, application)

Did you have any problem with the property title during or before the process of creation?

Yes

No

If yes, which problem? _____

Do you know if there is any municipal law to create RPPNs?

Yes

No

If yes, had you read the municipal or state RPPN law?

Yes

No

If no, why?

If yes, what would you change in the law that can help the creation of more RPPNs?

Do you think this law is clear enough so everybody can understand it?

Yes

No

Why? _____

Did you have any legal conflicts during the creation of your RPPN?

Yes

No

If yes, which one?

Do you know any illegal activity affecting your RPPN?

Yes

No

If yes, which one?

-Personal

Would you create more RPPNs?

8.2 Survey environmental leaders perception

1. Pesquisa: Prefeito, Secretários, Vereadores e Conselhos Municipais.

1.- Qual é o seu nome? (*)

1.1.- Sexo (*)

Feminino

Masculino

1.2.- Faixa etária (*)

18-29

30-45

45-60

Mais de 60 anos

2.- Município onde você trabalha? (*)

3.- Cargo Ocupado?

Prefeito

Secretário de Meio Ambiente

Membro do Conselho do Ambiente

Vereador

Funcionário do secretariado de Meio Ambiente

Outro. Qual?

4.- Escolaridade? (*)

5.- Você sabe o que são as Reservas Particulares do Patrimônio Natural? (*)

Eu sei

Não sei

- 6.- Qual é a sua própria definição de Reserva Particular do Patrimônio Natural? (*)
- 7.- Existem Reservas Particulares do Patrimônio Natural em seu município? (*)
Sim
Não
Não sei
- 8.- Em seu município, foi criada uma lei municipal especial para a criação de Reservas Particulares do Patrimônio Natural? (*)
Sim
Não
Não sei
- 9.- Se você respondeu: Não. Discutiu-se na câmara municipal a criação de uma Lei Municipal de Reservas Particulares do Patrimônio Natural? (*)
Sim
Não
Não sei
- 10.- Existe algum programa municipal de apoio à criação de Reservas Particulares do Patrimônio Natural em seu município? (*)
Programas propostos pelo município
Programas propostos pelos proprietários de Reservas Particulares do Patrimônio Natural
Programas propostos pelos associação de Reservas Particulares do Patrimônio Natural
Não existem
Outro. Qual?
- 11.- Você sabe os benefícios econômicos, ambientais e administrativos das Reservas Particulares do Patrimônio Natural? (*)
Sim
Não sei
Qual?
- 12.- Você sabe sobre o recurso ICMS (Verde/Ecológico) que é dado aos municípios com Reservas Particulares do Patrimônio Natural? (*)
Sim
Não
Não sei
- 13.- Você acha que o município tem a infraestrutura para criar Reservas Particulares do Patrimônio Natural? (*)
Sim
Não
Não sei
- 14.- Você gostaria de orientação para a criação de uma lei Municipal do Reservas Particulares do Patrimônio Natural? (*)
Sim, eu gostaria
Não, não gostaria

8.3 Survey for RPPN owners perception

1. Proprietários do RPPN no estado do Rio de Janeiro

Qual é o seu nome? (*)

Faixa etária (*)

18-29 anos

30-40 anos

40-50 anos

50-65 anos

mais de 66 anos

Sexo (*)

Masculino

Feminino

Profissão (*)

Em que município está estabelecido o seu RPPN? (*)

Sua RPPN é (*)

Federal

Estadual

Municipal

Desde que você começou o processo de criação, quanto tempo levou para o governo a conceder-lhe o certificado de RPPN? (*)

inferior a 1 ano

1 ano

1 a 2 anos

2 anos

De 2 a 3 anos

mais de 3 anos

Sua RPPN está registrado no Cadastro Ambiental Rural (CAR)? (*)

Sim

Não

Se você registrou, Quais categorias de áreas previstas para o cadastro você possui em sua propriedade e estão registradas? (*)

Área de Proteção Permanente (APP)

Reserva Legal (RL)

Remanescentes de vegetação nativa

Área rural consolidada

Área de interesse social e de serviço público

Área de Uso Restrito

Outra

O que o motivou a criar o seu RPPN? (*)

A conservação ambiental

Pagamento Governo / Incentivos Financeiros do Governo

Obrigação Moral

- Não sabia o que fazer com sua terra/não era funcional
- Você acha que a paisagem é agradável
- O terreno tem um interesse histórico
- O terreno tem um interesse família
- Outro. Qual?
- Você realizar atividade em seu RPPN? (*)
- Eco-turismo
- Pesquisa
- Outro. Qual?
- Você acha que a criação de mais RPPN depende da iniciativa do governo ou de cada proprietário? (*)
- Governo
- Própria
- Por quê?
- Você recebe qualquer pagamento para ICMS Verde? (*)
- Sim
- Não
- Se a resposta for sim, quanto por hectare?
- R\$10-R\$20
- R\$21-R\$40
- R\$41-R\$60
- R\$61-R\$80
- mais de R\$81
- A RPPN recebe incentivos do PSA (Pagamento por Serviços Ambientais / Produtores de Água), por manter a qualidade das águas e florestas? (*)
- Sim
- Não
- Em seu município, existe um programa municipal de apoio para a criação de RPPNs? (*)
- Não sei
- Sim
- Não
- Qual?
- Você acha que a lei de RPPNs (federal, estadual ou municipal) é clara para que todos possam entendê-lo? (*)
- sim
- não
- Por quê?
- o que você mudaria na lei pode ajudar a que a criação de mais RPPNs?
- A Associação do Patrimônio Natural do Rio de Janeiro (APN / RJ) Apoiar a criação de mais RPPNs? (*)
- Sim
- Não
- Como?
- Este foi o mais difícil criar uma RPPN (*)
- muitos requisitos
- burocracia

pouca informação

Pessoal do governo não treinado / ignorância de pessoal do governo sobre o assunto

Não foi difícil

outro. Qual?