

ENVIRONMENTAL INSTITUTIONS AND ORGANIZATIONS AT LOCAL LEVEL IN BRAZIL

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SUMMARY

Environmental policies involve multiple stakeholders and constituencies, yet the state is a primary institution and the main actor in policy strategies. Since the inclusion of environmental issues in the agendas of national governments and international organizations during the 1970s up to now, environmental problems proved more challenging than ever, forcing the review of policy strategies adopted by nations to address them.

Tackling environmental issues requires state strategies at national level - and also at regional and local realms. Nevertheless, the role of sub-national governments in environmental policy is scarcely analyzed, especially at local level. In Brazil, little is known of what has been accomplished by local governments in terms of environmental institutions, although municipalities play an important role in the national institutional matrix, with equal responsibilities compared to the states and the federal central government.

The focal point of this study is the involvement of Brazilian local governments in environmental responsibility, as established in the environmental legislation of 1981 and confirmed by the 1988 Constitution. Our question is whether municipalities can create local institutions and organizations to face up to their environmental mandate.

In this paper we present the results of an exploratory analysis of local governmental organizations and the capacities set up to deal with the environmental mandate. Making use of an institutional approach, state organizations processes and structures are considered valuable indicators of the institutionalization of environmental policy. We used a theoretical model of organizational capacities for environmental policy and in which a taxonomy is framed for the exploration of recent national statistical databases on environmental management and expenditures during the period 2002-2009. A set of indicators was established, encompassing environmental organization structures, participatory bodies, administration, regulatory capacity, cooperative mechanisms and expenditures.

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In the first part of the paper we present the environmental responsibilities vested in Brazilian local governments, being the municipalities. In the second section we analyze the major resources and capacities needed for environmental defense and in the following section we present the taxonomy of resources and capacities employed to develop a scrutiny of nation-wide environmental datasets on environmental management and expenditures. The main conclusions and issues for further investigation are presented in the last section.

The research on the environmental institutionalization of Brazilian municipalities, when held up against the availability of resources and capacities for municipal environmental policies, demonstrated that there are already established municipal capacities as far as environmental policy actions are concerned throughout the country as well as a progress in the creation of an environmental institutionalization on local level during the first decade of the 21st century.

At least four in every five municipalities have gathered resources for environmental policy actions. They are still modest and in many aspects can be considered precarious. But the progress shown in environmental institutionalization reflects efforts and conquests that were essentially made by initiative and merit of the municipalities themselves. Contextualizing these results, the institutional and financial conditions that frame these activities, the helplessness of municipalities to face up to the new responsibilities, the capacities and the resources already gathered, all qualify the performance of the Municipalities as remarkable.

If analyzed in an aggregated way for the country as a whole and taking into consideration its evolution separately, the indicators point to an expressive progress from the part of municipalities to take up their role in environmental protection. Meanwhile, the qualification of institutional resources in function of existent relations between them and the remaining resources and capacities for an environmental policy reveal a large institutional weakness in the majority of the municipalities. Within the current framework of a national environmental institutional arrangement, the question is whether the majority of municipalities will remain condemned to continue suffering from inertia, revealed by a lack of two types of resources that are essential for an environmental policy: competent staff, adequate norms and financial resources.

KEY WORDS

Environmental policy, institutions, local governments, Brazil, environmental governance

1. INTRODUCTION

Environmental policies involve multiple stakeholders and constituencies, yet the state is a primary institution and the main actor in policy strategies. Since the inclusion of environmental issues in the agendas of national governments and international organizations during the 1970s up to now, environmental problems have proved more challenging than ever, forcing the review of [institutional] policy strategies adopted by nations to address them.

Tackling environmental issues requires first of all policies at national level. Sub-national government action is needed to help implementing national policies at regional and local levels and to respond to environmental local demands. Nevertheless, the role of sub-national governments in environmental policy is scarcely analyzed, especially at local level. In Brazil, little is known of what local governments have established in terms of environmental institutions, although they play an important role in the national institutional matrix, having equal responsibilities compared to the states and the federal government⁴.

The focal point of this research is the involvement of Brazilian municipalities (local governments) in environmental responsibility as established in the environmental legislation of 1981 and confirmed by the 1988 Constitution. Our question is whether municipalities can create institutions and organizations to face up to their environmental mandate.

The Brazilian environmental system encompasses all federal, state and municipal entities in environmental protection. Its environmental matrix has solid institutional foundations and the national system of environmental management encompasses all three tiers of government bodies responsible for environmental protection. State and municipal governments are responsible for the enforcement of national norms and for formulating and implementing their own rules. However, crucial issues are still undefined - such as the distribution of responsibilities among federal, state and municipal entities and a regular source of funding for environmental action. Currently, assignment of environmental responsibilities across all the tiers of government is unclear and municipalities have no special funding to create local environmental organizations and capacities.

Recent data on environmental public expenditure show a surprising situation regarding municipal performance. Over the period 2004-2009 municipalities have been responsible for 23% of total state public spending on environmental management: municipal response to pressures and rules of environmental national institutions appears to be more important than expected (see Table 1).

⁴ The first national survey on municipal environmental management was undertaken in 2002 (IBGE, 2005).

Table 1: Governmental Expenditures -Environmental Management, 2004-2009 (R\$1.000,00)

	2004	2005	2006	2007	2008	2009
<i>Municip.</i>	975.773,83	761.008,84	1.161.871,17	1.478.151,92	1.867.737,12	1.972.740,93
<i>States</i>	1.658.062,46	1.927.732,63	1.846.849,76	1.770.934,32	2.102.413,61	2.513.716,80
<i>Union</i>	1.193.443,08	1.992.004,47	1.497.923,12	3.145.948,11	3.639.079,45	3.697.451,94
<i>Total</i>	3.827.279,37	4.680.745,93	4.506.644,05	6.395.034,35	7.609.230,18	8.183.909,67

Sources: Ministério da Fazenda, 2003, 2004, 2005, 2006, 2007, 2008 e 2010

The main goal of this paper is to assess how far the Brazilian state has gone in turning the new environmental institutions operational at local level by analyzing the municipal institutional and organizational arrangements that support such performance in public spending.

In this paper we present the results of an exploratory analysis of the recent evolution of Brazilian local government organizations and the capacities set up to deal with their environmental mandate. Making use of an institutional approach, state organizations, processes and structures are considered valuable indicators of the institutionalization of environmental policy. We use an analytical framework⁵ to study organizational resources and capacities for environmental policy with a taxonomy for the exploration of national statistical databases on municipal environmental management and expenditures available for the period 2002-2009. We also elaborated a statistical analysis on the evolution of environmental expenditures during that period. Official available information covers at least 90% of a total of 5,564 municipalities. A set of indicators supports the exploratory analysis which encompasses issues such as organizational structures, participatory bodies, administration, regulatory capacity, cooperative mechanisms and expenditures and assessed the evolution of resources and capacities during the period.

In the first part of the paper we present the environmental responsibilities vested in Brazilian local governments, being the municipalities. In the second section we analyze the major resources and capacities needed for environmental defense and in the following section we present the taxonomy of resources and capacities employed to develop a scrutiny of nation-wide environmental datasets on environmental management and expenditures. The main conclusions and issues for further investigation are presented in the last section.

2. BRAZILIAN LOCAL GOVERNMENT RESPONSIBILITIES ON ENVIRONMENTAL PROTECTION

The construction of state organizations and capacities for environmental policy is understood only in the light of the institutional order, which establishes the state's authority and obligations on

⁵ Developed in Neves (2006)

environmental issues. Thus, the Brazilian state framework of the environmental field, as described below, is analyzed from a federative organization perspective, focusing on the role of the municipality *vis-à-vis* the distribution of the responsibilities among the government tiers - Union, States, Federal District and Municipalities.

The municipal field of action on environmental protection is not exclusively defined by the institutional order that deals explicitly with environmental competences. It is delineated by a combination of this environmental order and the federative character of the Brazilian state and which establishes authority and assignments for the central, state, federal district and municipal governments. According to 1988 Constitution, municipalities have the same status as the states and the federal government. They have the autonomy to organize themselves, to set their own taxes and to establish their own rules and exert enforcement on their realm of competencies.

The Brazilian system of division of authority among the federal entities distinguishes material and legislative responsibilities. The material responsibility can be exclusively on state level or shared by all tiers. The authority to enact laws can be exclusively on state level, either concurrently or supplementary.

As for municipalities, their material responsibilities are indicatively defined by a key issue, the *local interest*, which covers the public services *per se*, the public works and other activities of public utility. The *local interest* concerns a wide field of action that includes all aspects in which the municipal interest dominates over the state and the federal ones. Many services considered basic to living conditions are included in this category, such as primary education and public transport. Part of them is of exclusive municipal jurisdiction, while others are of municipal jurisdiction shared with the States, the Federal District and the Union.

Some of the exclusive jurisdiction matters have a decisive influence on environmental quality, especially the promotion of territorial development by controlling occupation, subdivision and use of the urban land and the local master plan. Among the services of shared jurisdiction are health, environmental protection, the combat against pollution and the protection of historical and artistic heritage. For the shared competences, complementary norms are added to the Federal Constitution, establishing regimes of cooperation. The municipal duties also encompass matters which are not expressly mentioned in the Constitution, as it is impossible to exhaustively enumerate all local issues (Meirelles, 2001: 317).

As far as legislative jurisdiction is concerned, although municipalities are not referred to as internal public legal entities with jurisdiction to legislate on the environment⁶, it is understood that they

⁶ Federal Constitution, article 24.

have the power to create environmental norms, based on their responsibilities on the environment⁷ and on matters of local interest and may supplement the state and federal legislation as appropriate⁸ (Silva, 2009, p.80).

The environmental responsibility of the municipalities is confirmed and strengthened in the constitutional provisions that mandate the environment as an object of state tutelage⁹, when asserting that the environmental protection is a common assignment to the three tiers of power. The inclusion of the civil society as co-responsible for the environment together with the state allows for institutional arrangements that promote participatory processes in environmental decision-making in which civil society actors have a say.

The municipal mandate on the environment is therefore all-embracing, based on the constitutional pact (see Machado, 2010; Silva, 2009). For its execution, different policy instruments have been created by the *strict sense* environmental institutions over the two last decades of the past century, such as the Conservation Units, environmental licensing, zoning and quality standards. In addition to these, municipalities may also resort to instruments created for the execution of its exclusive assignments which may be extremely useful for environmental action, such as the use of municipal taxes for extra-taxation purposes, municipal zoning, urban land use, licenses and permits. They can also use instruments created by disciplinary rules on environmental commodities such as water and forests (for example, the use of river basins as a territorial unit for planning and the establishment of permanent preservation areas).

However, the Brazilian local governments lack essential elements to implement environmental policies, yet bearer of a constitutional mandate and of various tools to implement environmental policies. The rules on shared responsibilities¹⁰ on the environment have not yet been established. These should regulate environmental responsibilities at all levels and organize the their coordination, and the operationalization of responsibilities among all tiers of government. This stands in contrast to other shared segments, such as health and education that have clearly defined institutional rules and regulations, with neatly established divisions of responsibilities among the various state tiers, including mechanisms for coordination and funding sources. Consequently, up to now the municipal role in environmental issues has been casuistically defined: sometimes by the initiative of responsive governments who are able to organize the resources, often under pressure from public opinion, from civil organizations or from the Board of Prosecutors, at other times even following initiatives by state governments or the federal administration (Neves, 2006). Currently, shared environmental action, among all levels of government as well as between municipalities and

⁷ Federal Constitution, article 23.

⁸ Federal Constitution, article 30, I.

⁹ Federal Constitution, article 225.

¹⁰ Federal Constitution, article 23, 1st paragraph.

civil society organizations is also casuistic, resorting to two instruments: partnerships and public trust companies shared by all tiers of government.

3. MUNICIPAL RESOURCES AND CAPACITIES FOR ENVIRONMENTAL POLICIES

The constitutional environmental agenda of Brazilian municipalities is wide and diverse, based on traditional local activities combined with new ones derived from the environmental matrix, in a narrow sense... The study of municipal resources and capacities for environmental policy as presented below is based on an analytical framework of the main activities that compose the environmental municipal agenda, which takes into account both the characteristics of municipal competences and the specificities of the institutional matrix of the Brazilian environmental policy. These were identified on basis of specific aspects of municipal environmental policies and the institutional framework of municipal authority.

Here we use a taxonomy composed of eight categories of resources and capacities demanded by municipal environmental policies, as shown in Box 1 and described as follows:

Box 1: Taxonomy of resources for environmental policy

1. Institutional resources
 - 1.1 Territory
 - 1.2 Organizational
 - 1.3 Normative
 2. Human Resources
 3. Resources of knowledge and information
 4. Technological resources
 5. Operational resources
 6. Financial resources
 7. Capacity for cooperation
 8. Capacity for institutional articulation
-

Institutional resources. Institutional resources¹¹ considered here are the structures that formalize government action in environmental matters: the distribution of powers and roles in environmental protection among governmental authorities (hereafter called *territory resources*¹²), the structuring norms (*normative resources*) and the public organs established for the execution of the state mandate on environmental protection (*organizational resources*).

Territory Resources designates the state assignments on the environment and the enforcement power derived from it. As previously stated, the municipalities are fully invested with an environmental mandate that gives them the prerogative to intervene in a wide range of activities and

¹¹ The approach adopted for the institutional resources is based on the definition of *institutions* formulated in Chang and Evans (2005: 2).

¹² Bardach (1996: 177), uses the term “turf” “[...] to refer to the exclusive domain of activities and resources over which an agency has the right, or prerogative, to exercise operational and /or policy responsibility.”

to exercise the environmental enforcement power. This mandate is intertwined with the granted responsibilities on all matters of local interest.

Organizational resources are the governmental organizations that have a *mandate* to intervene in the field of environmental protection. These organizations can have various forms – including government offices (such as Secretariats), departments, advisory bodies, research centers and foundations of a technical nature, deliberative or consultative councils and environmental funds. In the case of the Brazilian environmental framework model, several types of institutional governmental organization are necessary. At the municipal level, along with the organization of direct administration responsible for implementing an environmental policy (OMMA), an Environmental Municipal Fund (FMMA) and a Municipal Environmental Council (CMMA) are required to execute environmental licensing.

The *normative resources* are composed of the norms which establish obligations, rights and environmental policy instruments to formalize plans, programs and projects. The institutionalization of environmental policy premises the adoption of new paradigms which often mean a break with the *status quo*, demanding the formalization of new ‘rules of the game’. The creation of municipal legislation is, as in other tiers of power, a quite complex institutional construction, often essential for the viability of the local action of environmental protection (Machado, 2010). Part of the environmental norms of the federal and state governments is self-applicable, dispensing local regulations. But not few circumstances require municipal regulations in order to fit particular situations - for example environmental licensing, the creation of protected areas of local interest and the institution of municipal penalties. Therefore, the creation of municipal norms is a prerequisite for the realization of a broad spectrum of policy actions and for the full exercise of enforcement. Its existence denotes an environmental policy geared towards local specificities and indicates the capacity of the civil society and its representatives in the legislative organs to act in the environmental field.

Human resources are the people responsible for formulating and implementing environmental policies. Besides the ever-present complexity of administrative routines in environmental management, which at least requires a minimal separation of political, technical and administrative aspects, more factors require that the staff needs diverse skills. The vagueness of the environmental norm (Azuela, 2006), associated with the highly arbitrary features of Brazilian environmental legislation, requires specialized skills for its interpretation and its subsequent transformation into decisions, contents and routines. A second approach to be considered is the distinction between permanent and temporary staff. The permanent environmental staff represents acquired know-how in the interpreting process of policy-making and implementations. They are the guardians of the culture of the environmental organization, in which the values of environmental protection, the code

of behavior and its identification with the work theme - i.e., “standing up for your thoughts” - are consolidated. A third analytical approach considers the participation of paid staff and volunteers in environmental programs. Many environmental issues demand programs which essentially depend on participants who are unpaid workers¹³.

The *resources of knowledge and information* consist of the collection of information and systemized knowledge about the environment and about the policy responses. They include both the production of science-based knowledge and the knowledge of local communities, gathering studies, reports and diagnoses, among others.

The *technological resources* comprise systems such as geo-referenced databases, embedded IT systems, environmental monitoring systems, models for the creation of scenarios and plans, information processing tools, simulation models and computer programs, which should all be differentiated from the basic collection of data and information that feed them.

The *operational resources* include equipment and infrastructure such as buildings, laboratories, computers, vehicles and instruments for inspection (such as cell phones, cameras, GPS devices, radio transmitters and other communication tools), among others.

The *financial resources* include the budget allocations for municipal organizations, funding coming from the private sector and from other government levels, resources generated by the OMMAs through, for example, environmental services (licensing fees, sales of entry tickets to parks), compensation for environmental harm and the imposition of fines. The ability to allocate funds in environmental protection is here referred to as *capacity for environmental spending*.

The *capacity for cooperation* refers to the ability to associate actors and organizations in stable coalitions for the promotion and implementation of municipal environmental policies (PAMs). *Capacity for institutional articulation* means the ability to take and make use of existing institutional instruments to give voice to the defense of local interests, to promote understanding with other state or civil organs and to establish agreements for the promotion of PAMs.

The analysis of the current situation and evolution of municipal institutions and organizations (2002-2009) is based on the establishment of indicators about resources and capacities already created by Brazilian municipalities for the purpose of environmental management and based on available information of nation-wide data for the period statistically referred to. The taxonomy presented above was aligned to the statistics available in the databases on municipal environmental

¹³ For example, it is unthinkable to implement a system of selective garbage collection without any unpaid time spent on it by users; structuring an environmental monitoring system that dispenses the population's involvement in monitoring; guiding the actions of the government's enforcement policy without considering systems which involve citizen action through complaints and requests for inspections, or even having an active environmental council, with the participation of society, without considering the unpaid time spent on advisory responsibility.

management and on municipal expenditures for environmental management¹⁴, based on susceptible variables of statistical observation. It was possible to create indicators for the characterization of organizational, human, normative and financial resources and the capacity for cooperation. The available databases allowed a quantification of a significant part of the total of resources of environmental policy, but the results shown below do not claim to be the total values of all indicators. These indicators express quantity rankings of minimal values. There are far more local resources used in environmental policies while their quantification does not show up in available statistics. Part of these ‘invisible’ resources are under municipal control¹⁵ as they are allocated to policies that are related to local environmental control but are in fact traditionally linked to other sectors of municipal administration and whose revenues and expenses are not registered as ‘environmental management’. E.g. providing basic local environmental services such as drinking and industrial water supplies, garbage collection and processing and municipal water drainage, the administration of green areas, squares and other areas under municipal control, as well as territorial occupation and civil defense.

Another part of these unquantifiable resources concern those that are - directly or indirectly - linked to public policies but are not under state control. Since public authority is the principal, but not the only exclusive executor of public policies, part of the enabling resources of the PAMs is not under the control of the political and administrative authorities but in the hands of third parties, engaged by public policy actions through mechanisms of negotiation and cooperation, on which there are no statistics.

As far as financial resources are concerned, it must be considered that the information provided on financial revenue and expenses by the municipalities undergo changes due to recent adjustments in public expense accounting introduced at municipal level (since 2002). This once again leaves room for casuistic criteria in the allocation of expenses per function (a same expense can be correctly accounted in more than one function) and to subjective criteria (environmental management expenses can be accounted in other sectors’ functions).

¹⁴ IBGE 2005 e 2010; Ministerio da Fazenda 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2009, 2011 a, b, c, d, e, f, g

¹⁵ In the field of environmental policies they are gaining in visibility when analyzing the constitutional environmental agenda in the context of municipal attributes, from the point of view that the municipal constitutional environmental agenda consists of ‘new’ competences, vested upon them due to the institutionalization of the environmental policy. This added to ‘old’ competences which were already part of their responsibilities even before the environmental emergency attributions existed and which were progressively integrated into the environmental institutional emergency through recent revisions concerning their regulations (see the melioration and management of residual solid waste), despite the fact that they were already considered ‘environmental issues’ in specialized publications and amongst environmental management specialists. (Neves, 2008).

4. MUNICIPAL ENVIRONMENTAL INSTITUTIONS AND ORGANIZATIONS: EVOLUTION FROM 2002 TO 2009

Below follows an analysis of organizational, normative and human resources as well as cooperation and spending capacities. Considering the enormous diversity of Brazilian municipalities, the indicators were firstly analyzed at a national aggregate level and subsequently according to the distribution of resources among the organizational arrangements.

The comparison between the stock of resources and the indicators of capacity of cooperation available at the start (2002) and the stock identified at the end of the last decade¹⁶ - at individual and at a national aggregate level – shows up a growing importance of the municipalities as far as the creation of institutional environmentalism is concerned, invariably influenced by major differences between regions and between small and large municipalities, the only exception being the variation of human resources and normative resources.

Organizational Resources

At municipal level one can distinguish three levels of state environmental defense: the executive levels, here referred to as municipal environmental organizations – OMMAs; the linked entities with a deliberative or consulting function, the Municipal Environment Councils – CMMAs; and the municipal funds to finance environmental actions –FMMAs. In terms of format there are two types of OMMAs, the Secretariats and the Departments¹⁷. As for the treatment of the environmental issue, the exclusive environmental management differs from the shared environmental management with issues associated in a same agenda - the Secretariats take up both exclusive and shared formats, the Departments only deal with always shared formats.

The OMMA is the most usual organizational resource among the Brazilian municipalities, as shown in Table 2. In 2009, 84.5% of the Brazilian municipalities had some type of OMMA, representing a growth of 24,6% compared to 2002. The most often adopted format is the one of Secretariats (42,1% of the municipalities that have OMMAs). Among these municipalities, 24% chose the format of a secretariat exclusively in charge of environmental issues. The option for the treatment of environmental issues in conjunction with other issues occurs in 76% of the municipalities that have an OMMA.

Regarding the format, in a first instance, any kind of OMMA format provides the Municipalities with conditions to carry out an environmental agenda. However, there are nuances among the three

¹⁶ The majority of variables on environmental management is available for the years 2002 through 2009. Only a few variables were collected in 2008 (such as human resources) and others in 2009 (such as municipal environmental legislation). The data on environmental expenditures are available for all the years 2002-2009.

¹⁷ This expression here involves administrative units subordinated to Secretariats (they can be departments, boards, managements and advisory entities) or directly linked to the Mayor's office.

categories of OMMAs that acquire different meanings according to the population size of the municipalities and to the complexity of the environmental issues to be addressed. The exclusive Secretariats tend to perform their assignments more comprehensively than the others, because they have a clear mandate in relation to environmental protection and political significance of attention to the topic. There is a trend to a more agile policy transit with the Mayor than the other formats, not always verified.

Departments are more fragile than the Secretariats in the institutional scope and when compared to them they offer less transparency in its process of resource allocation, besides being easier to demobilize and to "empty" the environmental sector, with simple routine administrative decisions within the same executing unit.

The combination of the environmental issue with other issues in Secretariats, a situation found in 61,9% of the municipalities, can result in both a greater integration of the environmental issue with other issues of strategic importance but also in the subordination of environmental policy decisions to other areas with which it can have conflict situations, often at the expense of environmental protection. Or it can also express inability of carrying resources to create a proper organizational structure for the environment and indicate severe financial constraints, as well as becoming an issue of secondary political importance in the municipal agenda.

Finally, it is more difficult to create an organizational culture in a context in which the political importance given to the issue is limited and the technical side is more unstable. In light of these observations, the choice for Departments and advisory entities is appropriate only in situations of a shortage of resources, in small municipalities where the issue itself is the object of few demands and in municipalities in which environmental issues are closely associated to others.

The environmental municipal councils (CMMAs) are analyzed in terms of their existence, function and activity level. In 2009, 56% of the municipalities had CMMA (see Table 2). The CMMAs may have deliberative assignments or only consultative assignments. There is one exception which calls attention: the consultative bodies linked directly to the Mayor's office with total support of the city council's legislative chamber and therefore having an upgraded coordination capacity.

The CMMAs may have deliberative or only consulting attributes. Besides this requirement and the encouragement to create new relationships between state and society characterized by the institutionalized participation of society in environmental policies, one of the motives for the creation of CMMAs is the obligation of its existence for 'municipalizing' environmental licensing, whose normative framework requires an active CMMA, of deliberative nature, and with the participation of society. Being so, only 71% of municipalities that have a CMMA can actually execute assignments of environmental licensing.

Table 2: Municipalities and organizational resources, 2002 e 2009

	2002		2009	
	Municipalities	%	Municipalities	%
<i>Organizational resources</i>				
<i>Inexistent</i>	1,577	28.4	710	12.8
<i>Incipient</i>	2,296	41.3	2,325	41.8
<i>Incomplete</i>	1,607	28.9	1,330	23.9
<i>Complete</i>	77	1.4	1,195	21.5
<i>No answer</i>	3	0.0	0	0.0
<i>Total</i>	5,560	100.0	5,560	100.0
<i>Type of Omma</i>				
<i>Without Omma</i>	1,788	32.2	858	15,4
<i>Exclusive Secretariat</i>	326	5.9	1,124	20.2
<i>Shared Secretariat</i>	1,426	25.6	2,470	44.4
<i>Departaments</i>	2,017	36.3	1,108	19,9
<i>No answer</i>	3	0	0	0
<i>Total</i>	5,560	100.0	5,560	100.0
<i>Type of CMMA</i>				
<i>Without CMMA</i>	3,665	65.9	2,441	43.9
<i>Active CMMA</i>	1,451	26.1	2,220	39,9
<i>Inactive CMMA</i>	444	8.0	899	16.1
<i>Total</i>	5,560	100.0	5560	100.0
<i>Municipal Env, Fund (FMMA)</i>				
<i>Have Fund</i>	81	1.4	1,645	30
<i>No Fund</i>	5,476	98	3,915	70
<i>No answer</i>	3	0	0	0.0
<i>Total</i>	5.560	s.i.	5560	100.0

Sources: Author's calculations based on IBGE, 2005, 2010

A bit more than 30% of the municipalities have an Environmental Municipal Fund. The existence of active FMMA's is considered essential here to ensure availability of resources to PAMs. It allows addressing the chronic competitive disadvantages of the environmental area in the dispute for resources and provide conditions to obtain resources for the environmental sector, including those generated through the provision of services and imposition of sanctions, the others being restricted to get this type of resources from the 'single till' of the municipal treasury and only in case of a mandatory character as part of a municipal environmental action.

The current profile of the environmental organizational arrangements. The existence of an organizational arrangement is essential for the full performance of the environmental assignments and should comprise, at least, one OMMA, a CMMA and an FMMA, referred to together here as a

"complete organizational arrangement"¹⁸. Brazilian municipalities currently have a great variety of organizations that result in organizational arrangements for PAMs: the majority of Brazilian municipalities (87%) have, one way or the other, an organizational arrangement to execute some type of environmental protection activity (Table 2). The variation in all categories evidences a noticeable progress, suggesting that municipal environmental management is currently a reality of national importance.

Isolated agencies, classified as incipient arrangements, predominate at municipal level – 41,8% of the total. On the other extreme, a top layer of 21,5% of municipalities has complete organizational arrangements, while 12,8% have no environmental management organization at all.

The most common arrangements are still immature and impose important institutional constraints on the performance of municipal environmental assignments¹⁹. To evaluate the consistency of complete organizational arrangements one needs to analyze the creation of other types of resources: the fact of creating an organizational entity with environmental powers means establishing an institutional ‘territorial’ resource. But the mere fact of recognizing its existence as such does not mean that it has a real environmental policy meaning - the intention to act in defense of the environment might just be limited to creating an organ with a purely symbolic function.

Human Resources

The provided variables make it possible to analyze the composition of the municipal environmental administration framework in relation to the total labor contingent and employment aspects during the period 2002-2008 (see Table 3).

Despite the number of civil servants working with environment matters having increased 20%, the situation of this segment at municipal level is extremely precarious, as shown by two analyzed aspects: the ratio of permanent civil servants vs. the total of environmental staff and the share of the environmental administration in the whole of the municipal management. In 2009, the total contingent in the environmental field was 41,300 employees, 20% of who were commissioned and another 20% part-time. This ratio suggests a minimal stability in terms of environmental municipal administration²⁰. But the trend over the period shows up an increase in part-time staff compared to

¹⁸ Typology of institutional arrangements: Complete (some type of environmental structure + environmental fund + active Environmental Council); Incomplete (lacking one of the items above); Incipient (with only one of the items); inexistent (without any of the items).

¹⁹ The most known, and already mentioned, ones are the impossibility of executing the environmental licensing, which requires an active CMMA and participation of society, and the inability, due to the lack of funds, to ensure a specific allocation for financial resources to fund environmental action, even for funds raised through management actions and the execution of environmental policy.

²⁰ Two categories are considered here: permanent or non-permanent employees. The latter include staff hired under contracts for a specified period, the officeholders of commissioned positions and service providers.

full-time (9%), pointing to difficulties in creating a local environmental management. The comparison between the national medians and averages vs the analysis by deciles reveals there is an extreme concentration, intensified in this period: a vast majority of OMMAs with small staff and an ‘elite’ of municipalities whose staff is often far larger than in others.

Table 3: Municipalities and Human resources OMMAs 2002, 2008

<i>Statistics</i>	<i>Employees 2002</i>		<i>Employees 2008</i>	
	<i>Permanent</i>	<i>Total</i>	<i>Permanent</i>	<i>Total</i>
Municipalities	3,759	3,759	4,322	4,322
Mean	6.18	8.28	5.77	9.55
Median	2.00	2.00	1.00	3.00
Total	23,242	30,983	24,961	41,283
Percentiles				
10	0.00	1.00	0.00	1.00
20	1.00	1.00	0.00	1.00
30	1,00	1.00	0.00	2.00
40	1,00	2.00	1.00	3.00
50	2,00	2.00	1.00	3.00
60	2,00	3.00	2.00	3.00
70	3,00	4.00	3.00	5.00
80	5,00	6.00	4.00	7.00
90	9,00	12.00	8.00	15.00

Source: Author's calculations based on IBGE, 2005;2008

Only the municipalities included among the 10% of those with largest contingent of environmental employees can be considered as having a consistent staff. There is a quality increase among the ninth percentile in which the average increases to eight full-time employees and seven part-time workers²¹. In 2008, the environmental employees barely exceed 1% of the total staff of the municipal administration (IBGE, 2008).

Normative Resources

We consider here as municipal *normative resources* the municipal norms created to establish obligations and rights on the natural and the created environment, the ones aimed at creating instruments, plans and environmental programs.

Almost half (46,8%) of Brazilian municipalities established some norm or another with an environmental character, showing up a discreet advance and some withdrawals during the period 2002-2009. The most common type of norm is the inclusion, in the Organic Law, of a chapter or

²¹ Stable environmental bureaucracy is considered the one in municipalities in which at least 50% of the staff is active in environmental matters; unstable = less than 50%.

article devoted to the environmental issue, much more frequent than other types of norms, which do not occur in more than 14,2% of the municipalities²².

Table 4: Distribution of Municipalities and Normative Resources, 2002 e 2009 (%)

<i>Environmental resources</i>		<i>2002</i>	<i>2009</i>
<i>Existence of environmental norms</i>	No	57.5	53.2
	Yes	42.5	46.8
<i>Chapter or article in Organic Law</i>	No	65.4	82.2
	Yes	34.6	17.8
<i>Chapter or article in Master Plan</i>	No	94.5	95.4
	Yes	1.8	0.3
<i>Environmental code</i>	No	92.8	91.4
	Yes	7.2	8.6
<i>Local Conservation Unit</i>	No	93.6	4.9
	Yes	6.4	1.5
<i>Other types of environmental norms</i>	No	92.8	85.8
	Yes	7.2	14.2
Total		100.0	100.0

Source: Author's calculations based on IBGE, 2005, 2010

The frequency of normative resources varies according to the quality of organizational arrangements, as shown in Table 5.

Table 5: Distribution of municipalities, organizational arrangements and normative resources, 2009 (%)

<i>Types of Organizational arrangements</i>	<i>Yes</i>	<i>No</i>	<i>Total</i>
Inexistent	13.2	86.8	100
Incipient	33.2	66.8	100
Incomplete	59.0	41.0	100
Complete	79.4	20.6	100
Total	46.8	53.2	100

Source: Author's calculations based on IBGE, 2010

Capacity for Cooperation

The capacity for cooperation of the municipalities for environmental actions is analyzed through the statistics on signing of conventions and on the participation in consortia for environmental purposes, the granting of environmental licenses and the participation in river basin committees (CBHs).

²² Normative Resources: existent (with some type of environmental legislation, excluding the laws on the creation of conservation units); non-existent (without environmental legislation).

Table 6: Distribution of municipalities and cooperation capacity, 2009 (%)

<i>Municipalities</i>	<i>Public consortia with munic.</i>	<i>Public consortia with states</i>	<i>Pubic consortia Union</i>	<i>Agreement private sector</i>	<i>Communities and private support</i>	<i>Participates in CBHs</i>	<i>Cooperates with State in licensing</i>
<i>Yes</i>	17.5	8.9	2.9	6.5	7.9	38.9	35.0
<i>No</i>	82.5	91.1	97.1	93.5	92.1	61.1	65.0
<i>Total</i>	100	100	100	100	100	100	100

Source: Author's calculations based on IBGE, 2010

The capacity to cooperate in matters related to the environment as demonstrated by Brazilian municipalities is noticeable. Its importance is amplified when the indicators are held up against the absence of stimuli and incentives for cooperated action, the lack of institutional qualifying means of the Municipalities to promote cooperated actions and the diversity of themes that encourage joint action and the participation in articulating forums.

Municipalities are here classified in three categories: no-cooperative, cooperative (at least one type of activity in cooperation) and very cooperative (develop all activities in cooperation). Again, the cooperative capacity is correlated to the quality of organizational arrangements.

Table 7: Distribution of Municipalities and cooperation capacity, according to organizational arrangements, 2009 (%)

<i>Types of organizational arrangements</i>	<i>Non cooperative</i>	<i>Cooperative</i>	<i>Very cooperative</i>	<i>Total</i>
<i>Inexistent</i>	53.4	46.6	0	100
<i>Incipient</i>	28.6	70.9	0.5	100
<i>Incomplete</i>	11.9	86.4	1.7	100
<i>Complete</i>	5.3	89.5	5.3	100
<i>Total</i>	22.8	75.5	1.8	100

Source: Author's calculations based on IBGE, 2010

Financial Resources

The financial resources gathered for the actions of PAMs are examined here according to the variation in environmental spending in the years between 2004 and 2009. The municipalities were classified into two categories: those with environmental expenditure and those without.

Subsequently another expenditure category was added, dividing the group with environmental expenditure into two subgroups: insignificant expenditure (up to 240,000 reais²³) and significant expenditure (more than 240,000 reais).

²³ Reais: Brazilian currency

On the global expenditure on *environmental management* sub-function, 2009. The total expense of the municipalities from the sample on environment in 2009 was R\$2,000 million, representing a national mean of R\$377,000 per municipality.

**Table 8: Municipal expenditures in environmental management, 2009
(Reais correntes)**

<i>Statistics</i>	<i>Expenditures environmental management</i>
Municipalities	5,433
Mean	377,905,07
Median	380,00
Sum	2,053,158,270.33
Percentiles expenditures	
10	0
20	0
30	0
40	0
50	380,00
60	9,976
70	34,338,73
80	92,846,45
90	336,740.19

Source: Author's calculations based on Min. Fazenda, 2010

Meanwhile this indicator hides the intense concentration of environmental expenditure by a minority of municipalities – the average is a thousand times less, equivalent to the symbolic expenditure of R\$380.

Table 9: Gini coefficients in Environmental expenditure share of the 10 first municipalities in spending capacity (%) 2009

	<i>Gini</i>					
	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>
<i>Environmental management expenditures</i>	0,971	0,965	0,956	0,957	0,953	0,951
<i>Share 10 first municipalities in spending capacity (%)</i>	46,2	42,77	38,85	41,06	38,56	36,67

Sources: Author's calculations based on Min. Fazenda 2005, 2006, 2007, 2008, 2009, 2010

This contrasts with the impacting spending capacity of a small group of municipalities. There exists an 'environmental elite' with large expenditure capacity, consisting of a very small number of municipalities that already have reached an impressive expenditure capacity.

In this group the absolute leader of the pack is São Paulo, the core of one of the largest megacities in the world, and which on its own is responsible for 12,2% of the national municipal

environmental expenditure in 2009. It is followed by nine other state capitals, together representing 37% of total environmental expenditure.

Box 2: Municipalities ranking in capacity for environmental spending, 2004-2009

	2004	2005	2006	2007	2008	2009
<i>Aracaju (SE)</i>	7					
<i>Belo Horizonte (MG)</i>	3	4	3	4	3	3
<i>Contagem (MG)</i>				9	10	
<i>Curitiba (PR)</i>	10	7	9	6	7	10
<i>Fortaleza (CE)</i>	6	6	5	5	5	5
<i>João Pessoa (PB)</i>	5	5				
<i>Piracicaba (SP)</i>	9		10			9
<i>Porto Alegre (RS)</i>		10	7	8	9	10
<i>Ribeirão das Neves (MG)</i>		9				
<i>Rio das Ostras (RJ)</i>			6	7	7	7
<i>Rio de Janeiro (RJ)</i>	2	2	2	2	2	4
<i>Santos (SP)</i>	4	3	4	3	4	2
<i>São Paulo (SP)</i>	1	1	1	1	1	1
<i>Vitória (ES)</i>	8	8	8	10	8	8

Sources: Min. Fazenda, 2005, 2006, 2007, 2008, 2009, 2010

The municipalities that did not spend anything, as well as those that had insignificant²⁴ expenditure are all concentrated geographically in the North-Eastern region, followed by the South-East. Municipalities with significant expenditure are to be found in the South-Eastern and Southern regions as well as those with superior expenditure, with an increasing participation of the South-Eastern municipalities. These municipalities are quite heterogeneous, with a concentration of those with higher expenditure alongside those with zero expenditure.

The capacity of environmental expenditure is correlated to the quality of organizational arrangements, as shown in Table 10. As the level of expenditure rises, so does the frequency of arrangements made up by more than one type of organization. Some intriguing situations can be found though.

Such as a group of 291 municipalities with complete arrangements but which declared zero expenditure and the 1,560 municipalities with Secretariats which declared up to 1,000 reais in expenditure, suggesting an indolence for environmental protection and use of organizational resources as symbolic function.

There was significant progress during the period concerned. In 2002, 64.6% of municipalities did not have any environmental expenditure. This ratio fell to 49,7% in 2009. Today more than half of the municipalities register expenditure related to the environment, although, as seen, often with very small values.

²⁴ A value of R\$240,000.00 is considered in this paper the benchmark of 'significant' expenditure .

A de-concentration of expenditure is perceivable, as shown in Table 9. The Gini index for this variable fell from 0.968 in 2002 to 0.951 in 2009, during the period that was analyzed. The participation of the ten municipalities with the largest share of total expenditure, another indicator of concentration, also shows a downward trend during the same period, from 46.2% in 2004 to 36.7% in 2009. This list includes, during the years analyzed, the municipalities of São Paulo, Rio de Janeiro, Belo Horizonte, Curitiba, Fortaleza and Santos. Of these, only São Paulo shows up a clear trend of larger participation, rising from 8.5% of total municipal expenditure in 2004 to 12.2% in 2009.

Table 10: Distribution of Municipalities and environmental spending, according to types of organizational arrangements, 2009 (Reais correntes)

<i>Environmental spending</i>	<i>Types of organizational arrangements</i>				
	<i>Inexistent</i>	<i>Incipient</i>	<i>Incomplete</i>	<i>Complete</i>	<i>Total</i>
<i>Zero</i>	72.9	58.0	44.4	25.7	49.7
<i>Up to 240,000,00</i>	26.2	35.9	42.4	45.7	38.3
<i>240,000-480,0000</i>	0.7	3.0	5.5	7.8	4.3
<i>480,000-960,000</i>	0.1	1.6	3.2	7.1	3.0
<i>960,000-2,000,000</i>	0.0	0.7	2.0	6.4	2.2
<i>2,000,000-5,000,000</i>	0.0	0.5	1.4	3.2	1.2
<i>5,000,000-10,000,000</i>	0.0	0.2	0.7	1.8	0.6
<i>>10,000,000</i>	0.0	0.1	0.3	2.3	0.6
<i>Total</i>	100	100	100	100	100

Source: Author's calculations based on Min. Fazenda, 2010

5. CONCLUSION

The research on the environmental institutionalization of Brazilian municipalities, when held up against the availability of resources and capacities for municipal environmental policies, demonstrated that there are already established municipal capacities as far as environmental policy actions are concerned throughout the country as well as a progress in the creation of an environmental institutionalization on local level during the first decade of the 21st century.

At least four in every five municipalities have gathered resources for environmental policy actions. They are still modest and in many aspects can be considered precarious. But the progress shown in environmental institutionalization reflects efforts and conquests that were essentially made by initiative and merit of the municipalities themselves. Contextualizing these results, the institutional and financial conditions that frame these activities, the helplessness of municipalities to face up to the new responsibilities, the capacities and the resources already gathered, all qualify the performance of the Municipalities as remarkable.

If analyzed in an aggregated way for the country as a whole and taking into consideration its evolution separately, the indicators point to an expressive progress from the part of municipalities to take up their role in environmental protection. The creation of organizational resources affects the immense majority of municipalities, the Environmental Councils are becoming more and more active, the quality of the arrangements is improving and the capacity of environmental expenditure is expanding. More discretely, positive trends are noted in the creation of normative resources and in the capacity of environmental cooperation. The only sour note among the national indicators refers to the statistics concerning municipal environmental administration, pointing to a certain weakening and demanding further research.

Meanwhile, the qualification of institutional resources in function of existent relations between them and the remaining resources and capacities for an environmental policy reveal a large institutional weakness in the majority of the municipalities. Only in a small group of municipalities the capacity of expenditure and the existence of an environmental bureaucracy indicate that their institutional resources correspond with a minimal capacity of action for environmental protection.

Within the current framework of a national environmental institutional arrangement, the question is whether the majority of municipalities will remain condemned to continue suffering from inertia, revealed by a lack of two types of resources that are essential for an environmental policy: competent staff, adequate norms and financial resources.

The exploratory analysis also allowed identifying a positive association among institutional resources and the other types of resources and capacities for environmental protection, giving the investigation depth to understand mutual relations. In this analysis it was possible to identify the national profile of the environmental institutionalization of municipalities and to make clear extreme disparities between municipalities, as well as the unquestionable process of environmental institutionalization of the municipalities.

Many worlds are hidden in the national universe of municipalities. Beyond the extreme cases of progress and stagnation, in a large number of small to medium-sized municipalities, as well as in the niches of the municipalities that showed up a good performance in a few regions, we found a surprising stock in resources and capacities, outlining processes that demand further research.

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