

INSTITUTIONS AND ENVIRONMENTAL GOVERNANCE: THE CASE OF ENVIRONMENTAL PERMITTING FOR OFFSHORE OIL AND GAS PROJECTS

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Introduction

Environmental governance is a critical factor required for sustainable development. It provides opportunities for: (a) the establishment of long-term commitments; (b) policy coordination between scales of government and sectorial initiatives; and (c) for participation and public control in the formulation of sustainability strategies (Kardos, 2012). Despite a strong legal framework, Brazilian reality is challenging because the question of sustainability remains as a low priority in the national political agenda (Cavalcanti, 2004).

Given this scenario, it is interesting to investigate how public agencies operate in the environmental field. These organizations must be understood in the light of their interactions with other powers (e.g. judiciary, legislative) and with the private sector, due to existing inter-dependencies (Mahoney, McGahan & Pitelis, 2009). The general objective of this paper is to relate institutions with environmental governance systems. Specifically, we aim to understand and propose improvements for the environmental governance of oil and gas exploration and production in the Brazilian maritime zone.

To achieve these goals, we conducted a case study of a unit of the Brazilian Institute for the Environment and Renewable Natural Resources (*IBAMA*). The work focused on the General Coordination of Oil and Gas (*CGPEG*) of the Licensing Department (*DILIC*), which is the department in charge of issuing environmental permits for offshore oil and gas exploration and production undertakings. The discovery of extensive pre-salt oil reserves consolidated the oil and gas industry as one of the most important in the country, an industry that develops activities associated with significant environmental

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impacts. The consequences of this setting depend highly on the performance of the environmental governance structure.

A better understanding of the relevant elements and their relationships is essential if one is to improve the existing system. Nonetheless, the use of the institutional theory in the area of environmental governance remains little explored – even though it can offer important contributions to the field (Barros, 2007).

Institutions, Governance and the Environment

Institutions are humanly devised constraints, both formal (laws, norms, etc.) and informal (conventions, codes of conduct, etc.), that determine regularities, reduce uncertainties, and provide a basis for the functioning of the economy and society (North, 1991). Considering a reality of positive transaction costs and necessarily undefined property rights (Barzel, 1997), the State has the task of providing coordination through cooperation incentives and means of conflict resolution (Fiani, 2013).

The concept of governance, focusing on the public-sector perspective, is related to the State's capacity and conditions to perform these functions. Thus, it is important to develop and implement policies without prioritizing only technical or political criteria, deepening State-society ties. This implies in the strengthening of accountability instruments, the effective independence of powers, the existence of external controls and, generally, in the institutionalization of instruments of accountability (Diniz, 1998). Also, this requires the organization of society in a way that promotes participation and representation. Hence, local governments should advance administrative decentralization, and the autonomy and articulation of the different spheres of power ought to be assured (Diniz, 2014). In other words, the 21st century State needs to have more responsibility, achieve greater autonomy and involve larger segments of society – building more complex and demanding forms of partnerships (Evans, 2008).

However, institutional change is not simple, since institutions are shared systems of beliefs, rules and means of organization. Thus, they establish regular forms of social behavior, reflecting equilibria that facilitate human interaction (Kingston and Caballero, 2009). Therefore, they are stable and their development is path dependent. Changes result from several elements, such as information availability, existing forms of communication or the number of actors involved. Moreover, institutional transformations often follow a pattern of punctuated equilibrium, where periods of stability are interrupted by crises that lead to the emergence of new institutions (Van den Bergh, Truffer & Kallis, 2011).

When the subject is environmental governance, the challenge is substantial because one must deal with issues of complexity and uncertainty. There are complications regarding scales and boundaries: the time scale of politics is considerably shorter than the time scale of environmental changes; political and ecosystem boundaries rarely coincide; and environmental changes have a systemic characteristic, hence understanding the scale of the resulting impacts is often complex (Meadowcroft, 2002). Thus, the definition of what is most appropriate in the light of environmental policy faces barriers of information, consensus building and organization (Graaf, Musters & Keurs, 1996).

In Brazil, environmental governance is currently poorly structured. There are no significant mechanisms that include environmental policy in other public policies, such as energetic or economic policies, and there is a growth in the country of industries that require an intensive use of natural resources and energy (Lustosa, Cánepa & Young, 2010). It should be noted that this scenario is part of an international history of environmental injustice associated with the global economy and the international division of labor (Young & Lustosa, 2003). Nationally, there is a shortage of funding for environmental management, with environmental agencies lacking qualified personnel and proper technical instruments. Moreover, the use of command and control mechanisms predominates, environmental permitting being the major one – despite its limited scope (Lustosa, Cánepa & Young, 2010).

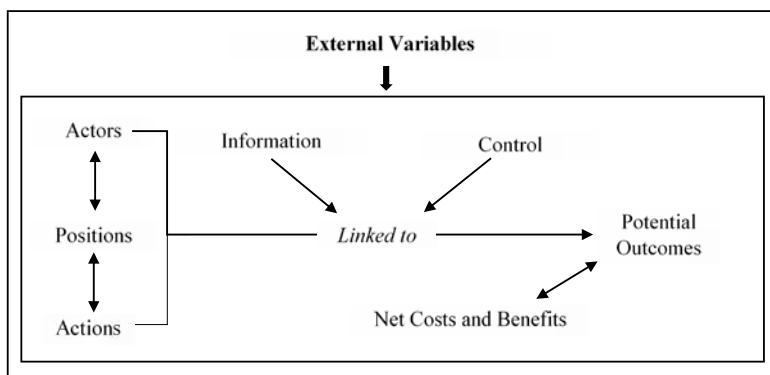
The effectiveness of environmental governance systems depends on the relationships between the relevant variables, as well as on the particular attributes and the context in which the system is operating (Ostrom, 2007). Its focus should not fall solely on efficiency precepts, but also take into account considerations regarding social justice. This implies a recognition of intrinsically distinct values, as well as the need for making participation feasible and acknowledging the various actors involved in the matter (Pavola, 2007). The multiplicity of variables involved requires institutional arrangements that deal with uncertainties and increase the system's resilience (Berkes, 2005).

Enhancement opportunities for the development of more effective institutions exist not only in the structuring of environmental entities, but also in their organization. With this aim, we proceed to the study of the institutions present in the environmental governance system of the offshore oil and gas sector and, in particular, CGPEG.

Methodology

The methodology used in this study is based on the Institutional Analysis and Development (IAD) framework (Ostrom, 2011). The centerpiece of this is the action situation, where decisions are made by actors in certain positions, taking into account existing controls and available information – as Figure 1 illustrates.

Figure 1: The internal structure of an action situation
(Source: Summarized from Ostrom, 2009a)



The representation depicted above relates to external variables that include the situation of the resource system, the attributes of the community and the rules in use (Ostrom, 2009a). At a higher level, several action situations are interrelated, creating feedback loops that influence decisions made within each setting (Ostrom, 2009b). Thus, the IAD framework indicates key variables – such as system size, time horizon and mobility of the agents – as well as desirable properties and evaluative criteria. Among the latter, some examples are economic efficiency, redistributive equity and the sustainability of the institutional arrangement (Ostrom, 2011).

In order to follow this methodology, the interviews were an important source of information for the case study.

Interviews

Thirteen individuals were interviewed. We chose to identify them only by their institutional positions, as follows: a member of the Brazilian Petroleum, Gas and Bio-fuels Institute (IBP) (1); an environmental analyst that headed the Coordination of Pipelines, Nuclear and Electric Energy (COEND / DILIC / IBAMA) (2); two environmental analysts who were CGPEG's coordinators, one of whom was still in this position (3, 4); four environmental analysts from CGPEG, one from the Exploration Coordination (5) and three from the Production Coordination (6, 7, 8); an environmental analyst who acted as an advisor to IBAMA's Licensing Department (9); a member of Habtec, a consulting firm that conducts environmental studies and projects (10); an officer in charge of the Navy's Ports and Coasts Department (11); a board adviser of the Petroleum, Natural Gas and Bio-fuel National Agency (ANP) (12); and a member of Oceanpact, a company that provides services and equipment for the oil and gas sector (13). The numbers listed here in parentheses will be used to refer the respective actors in the results section later on.

The script used in the interviews was based on a literature analysis, went through a phase of adjustments with the participation of academics, and was completed after being discussed with some of the interviewees. The interviews were semi-structured and lasted approximately one hour. Initially, a brief (oral) introduction explained the scope of this work and the interviewees were invited to express any observations related to the theme that seemed interesting to them. Next, blocks of questions were made, beginning with the outline of the general objective sought and, if necessary, with further discussion of subtopics of interest. The script used is presented in Annex I. At the end of the process, a summary of each interview was prepared and sent to the respective participant, being subject to possible adjustments. Subsequently, such abstracts were published (Bredariol, 2015).

Analysis methods

The results presented here are the outcome of information triangulation, reflecting the identification of topics emphasized in more than one source. In order to enable this triangulation, all the research means indicated by Yin (2001) for a case study were used: interviews; direct observation; participant observation; documentation; files; and artifacts.

Thus, we only reproduced information obtained through more than one source and which was relevant within the context of this case study. When faced with possible contradictions, we sought to present both manifested visions. It should be emphasized that, in spite of these precautions, the results may lack complementary aspects, since the research effort was limited and perhaps subject to bias arising from the interview format.

Results

The results of the case study are discussed under two separate headings in order to contextualize and explore the identified action situation. First, we address the general environmental governance system. Then, we examine CGPEG's role, taking into account the institutions that limit its sphere of action.

Environmental Governance of the Offshore Oil and Gas Sector

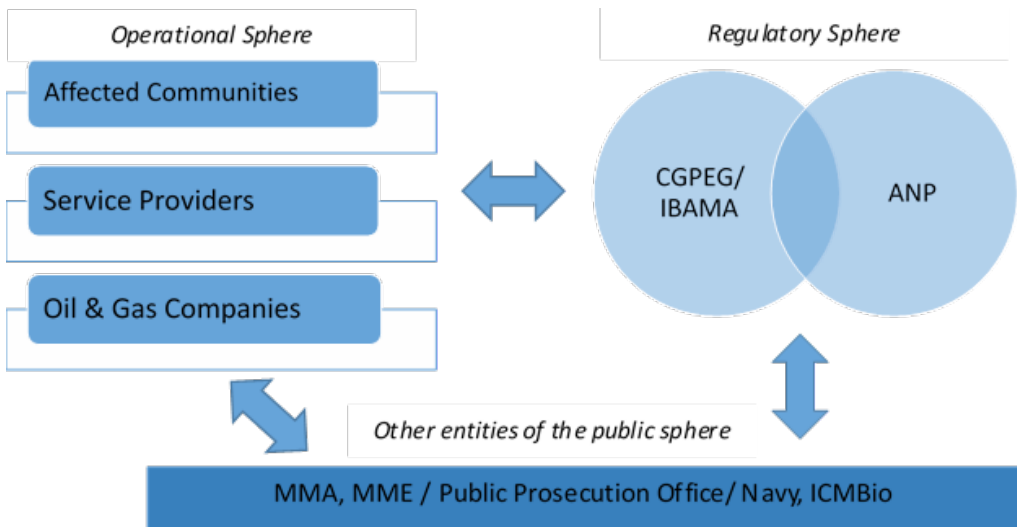
It was only after the end of the State's monopoly over the offshore oil and gas sector that this system of governance was consistently structured, i.e., in the late 1990s (3, 6). At this point, the main regulatory bodies were established, such as the ANP and the Petroleum and Nuclear Undertakings Licensing Office – the origin of CGPEG. Initially, this unit experienced difficulties in its relationship with external entities, including the industry, because its legitimacy and capacity were not yet recognized (3, 7). With time, experience and the qualification of IBAMA's technical staff, this relationship matured (3, 13). An important aspect in this sense was the permanence of the environmental analysts for long periods of time, retaining knowledge and facilitating the establishment of a continuous dialogue (5, 10). Thus, an approximation and cooperation between the different actors of the system was initiated – even through formal coordination institutions (10, 11).

The National Oil and Gas Industry Mobilization Program (*PROMINP*) was a remarkable initiative in terms of coordination among organizations (1, 3). This program, coordinated by the Ministry of Mines and Energy, seeks to generate value from the oil and gas production chain. Between 2008 and 2010, an environmental council was set up to identify environmental bottlenecks in this area – its members being representatives of various agencies, such as the Ministry of the Environment (MMA), the Ministry of Mines and Energy (MME), the Energy Research Company, ANP, IBAMA, IBP, *Petrobras*, environmental state agencies and the Chico Mendes Institute for Biodiversity (ICMBio). This group was able to develop projects of mutual interest, improving the environmental permitting process – and generated results such as: MMA Ordinance No. 422 of 2011, which establishes procedures for federal environmental permitting of oil and gas exploration and production activities in the marine environment and in the land-sea transition zone (MMA, 2011); and the MMA / MME Inter-ministerial Ordinance No. 198/2012, which created the Environmental Assessment of Sedimentary Areas (AAAS), regulating the procedure for granting oil and gas exploration areas located in sedimentary basins both onshore and offshore, as well as the regulation of procedures for the

environmental permitting of associated undertakings (MMA / MME, 2012). The setting established in this council favored learning, consensus building and the maturing of governance mechanisms (1, 3, 12). In this way, a specific legal framework for these activities was consolidated.

Currently, there are several agents acting in the environmental governance of this sector, to wit: (a) CGPEG is responsible for environmental permitting; (b) the oil companies operate the undertakings and IBP is the organization that congregates operators; (c) ANP addresses operational safety; (d) the Navy acts in questions of navigability; (e) the Public Prosecution Office defends the interests of the affected communities; (f) ICMBio is in charge of environmental conservation units at the federal level; (g) the ministries, especially MMA and MME, develop policies; (h) other entities that have minor roles (4, 13). Concerning affected communities, their participation could be more significant and it is mostly limited to public hearings and other means of public consultation (5, 6). This configuration is illustrated in Figure 2.

Figure 2: Configuration of the Offshore Oil and Gas Governance System
(Source: Author's draft)



In view of this scenario, we observe that this is a complex and specialized institutional arrangement. There is a network of interaction between agents who know, in part, the other stakeholders and their reputations (1, 3, 8). Decisions are made based on a series of factors, among which we highlight the following: (a) the history of the sector; (b) available information; (c) the different existing interests and related conflicts; (d) technological and operational limits; and (e) the prevailing context (4, 12).

To illustrate, we may observe the case of the decommissioning of oil fields. The definition of what needs to be done – such as the permanent abandonment of wells, removal and disposal of physical structures and related environmental projects – depends on the existing technological alternatives, international procedures, related costs as well as the environmental and social context (Santos, 2011). The resulting project requires cleaning procedures and logistics that include vessels and rigs that bring additional environmental risks and impacts (CPROD / IBAMA, 2015a). This is a necessary step in any oil production project, and one that requires specific detailing and raises concerns about several environmental factors, including but not limited to: (a) the annual period when it will occur; (b) the type of waste generated and its best destination; (c) the monitoring of the remaining physical structure; (d) risks of oil spills and of the diffusion of exotic species; (e) the loss of jobs; and (f) impacts on the marine substrate (CPROD / IBAMA, 2015b).

Furthermore, there is a legal framework establishing some standards and rights regarding action situations that, however, are not perfectly defined (2, 8). This entails a degree of uncertainty that affects the bidding of oil and gas exploration blocks and the environmental permitting process (1, 3, 12). Moreover, the Brazilian permitting model, that places environmental studies under the responsibility of entrepreneurs, results in low quality Environmental Impact Studies (EISs) (8, 10). Scarcity in terms of available resources and information is a limiting factor. Often, manifestations related to permitting occur slowly because of the lack of structure of the institutions involved (1, 9). We also note the absence of public actions in other spaces, such as in the systematization of information related to the coastal environment or in fishing communities without access to public policies, leading to a concentration of demands on the environmental permitting process (1, 5, 6, 10).

Considering these limitations, it is interesting to highlight some of the main gaps found in this arrangement. There is a lack of strategic steps involving environmental variables, especially *ex-ante* governance efforts¹, which ends up making the system inefficient, as it postpones important decisions (1, 3, 12). This is the case of the AAAS, which only began to be effectively implemented in 2015, without any significant outcomes yet. This results in conflicts in the permitting phase that are difficult to solve (3, 8, 12). Such issues refer to the aimed developmental model as well as to an environmental zoning and overload a project-to-project analysis (2, 6, 8). Furthermore, some specific aspects, which are critical to the success of the governance system, should be highlighted, such as the precarious control of oil transport activities and the need for protection of the marine environment from invasive species. (3, 8).

On the other hand, the existing institutional dialogue is positive and facilitates the dissemination of good practices and the coordination of improvement actions (1, 4, 5, 13). In addition, the specific legal framework introduces interesting innovations, such as MMA Ordinance No. 422 /2011, which enables the consolidation of reference documents common to several permitting processes, facilitating learning and making this instrument more focused.

To sum it up, this is a complex system that deals with a specific activity, with relatively homogeneous undertakings and a limited number of companies that act in view of long-term plans within an environment of uncertainty (6, 10). The absence of strategic

mechanisms and complementary forms of governance to environmental permitting, renders decisions and resources in this area sometimes incompatible and demands institutional innovations (1, 5, 8, 12).

The General Coordination of Oil and Gas

CGPEG has evolved in conjunction with this institutional arrangement. According to internal archives, it went from a workforce of a single public servant and five consultants in 1999 to a specialized team of approximately eighty environmental analysts in 2015. It was an incremental process, resulting from a series of public examinations held with the intent of structuring IBAMA. In this process, two learning and improvement mechanisms deserve to be highlighted: the consolidation of thematic working groups (WGs), where technical and procedural issues are discussed internally; and enforcement actions in the post-permit phase, which, although they do not cover all projects, allow the verification of the effectiveness of the conditions established in the issued permits (5, 6). We note that, since the sector's undertakings are similar, several procedures and permit conditioning clauses are similar, favoring incremental learning and improvements. See, for instance, the permitting processes for the development of oil production in the Pre-Salt (CGPEG / DILIC / IBAMA, 2013).

As a result, this coordination has not only been able to fulfill its role as a regulator but also contributed to the evolution of knowledge in the area, provided support for environmental conservation and sought transparency in its decisions – as indicated by interviewees (3, 4, 6, 10) and references related to the area (Seifert, 2013; Mendonça, 2015). The development of technical directives that establish requirements and standards is an example of this, providing predictability and legitimacy to the permitting process. See the case of Technical Directive CGPEG/DILIC/IBAMA 01/10 – which proposes guidelines for environmental education programs developed regionally (IBAMA, 2010) – and resulted in environmental education initiatives that favor active intervention and qualified participation in public discussion forums (Pinto, Machado and Vilani, 2015). We note that, as early as 2009, the Federal Audit Court (TCU) pointed out that, in terms of standardization, CGPEG was well ahead of other DILIC units (TCU, 2009). Moreover, one of the issued documents stated that:

“The Technical Directive CGPEG/Dilic/Ibama nº08/08, with guidelines for the development of pollution control projects in environmental permitting processes (...) was initially presented to the industry and environmental consultants so that these could manifest their opinion. It was then put on public consultation for 45 days. After public review, it was formalized as a Technical Directive. This is an example of good practice that demonstrates the feasibility of a co-participatory standardization.” (TCU, 2009, p.39).

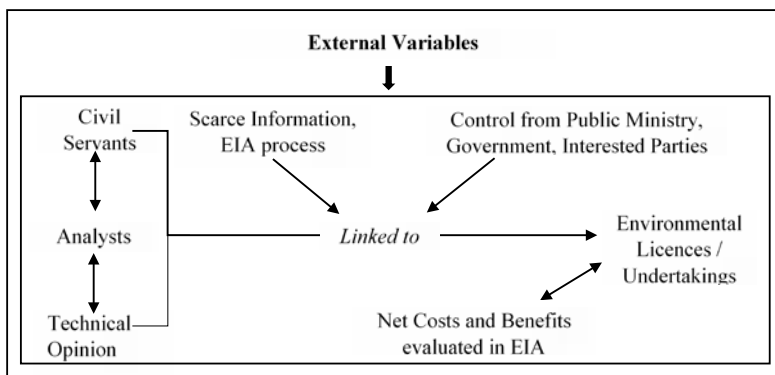
Since the consolidation of CGPEG, there has been a continuous technical evolution and innovation in terms of procedures. Currently, more detailed Terms of Reference are prepared and, in some cases, these are previously submitted to public consultation (4, 10)

(CGPEG / DILIC / IBAMA, 2014). There were also developments in the organization of public hearings, with preparatory meetings between companies and IBAMA as well as between this institute and affected communities. Another improvement is the intention to formalize and consolidate institutions, through documents, initiatives with the industry and the exchange of experiences among stakeholders (6, 10). All in all, the evolution of this permitting activity has been occurring through dialogue among CGPEG, the productive sector, consultants, regulators and other related agents (4, 10, 13). Although this dialogue is sometimes slow (12) or tough (1), it has been salutary and resulted in a continuous improvement of the governance system (1, 8, 10). Thus, there are cases of institutional cooperation, such as in the technical cooperation agreement between IBP and IBAMA (1, 3) – or in the context of oil spill emergencies, in the Monitoring and Evaluation Group, composed by the Navy, IBAMA and ANP (3,10).

It is opportune to point out some limits of CGPEG's sphere of action. First, there are challenges inherent to Brazil's environmental permitting model, which typically: (a) does not focus on follow-up actions or information disclosure (CPJA / FGV, 2014); (b) is based on studies of poor quality and hardly interacts directly with the proposed projects, resulting in few effective changes (Teixeira, 2008); and (c) is limited by a legal framework that has issues of legal uncertainty and sometimes results in the judicialization of processes (PROMINP, 2014). Second, there are resource constraints among which we highlight the ones associated with: (a) information on the state and functioning of the environment (1, 3); (b) the administrative area, which is poorly structured and leads to problems in the development of IT solutions and deficiencies in the workplace (IBAMA, 2013); and (c) the absence of staff positions related to the different functions present in CGPEG, being currently restricted to environmental analyst positions, a limited number of coordinators (two direct coordinators and one general coordinator), an administrative technician and a few workers from outsourced services (3, 4).

Within these conditions, this unit is organized through various institutional practices. This configuration changes both intentionally and unintentionally, through endogenous (e.g. post-permitting follow-up) and exogenous factors (e.g. development of new technologies). Figure 3 depicts a summary of its main elements.

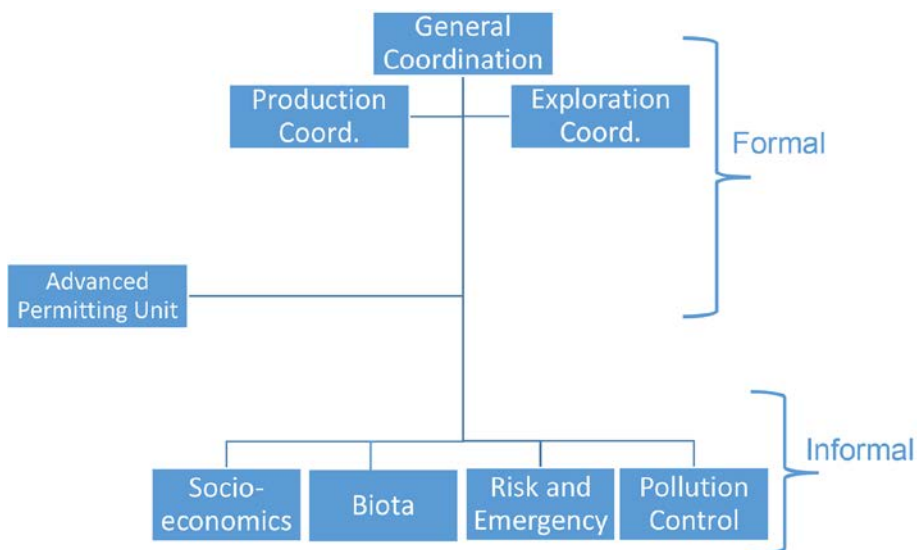
Figure 3: CGPEG's Action Situation (Source: Author's draft, based on Ostrom, 2009a)



Thus, environmental analysts are the main positions and are occupied by civil servants selected through public examinations. Their basic activity, though not the only one, consists in the preparation of technical opinions regarding the environmental feasibility of offshore oil and gas exploration and production projects. These opinions are based on an assessment of environmental costs and benefits through techniques of Environmental Impact Assessment (EIA), environmental studies and associated tools (risk assessment, environmental programs, etc.). Two significant aspects that affect this process are the information available and the control exerted by the Public Prosecution Office and by members of the government – which may reflect the perceptions of affected agents (e.g. fishing communities, oil and gas industry, etc.).

Therefore, CGPEG is organized through clear formal regulations, tacit knowledge about expected attitudes, and other informal practices (4, 5, 8). A significant part of the staff's actions depends on individual initiatives, such as the participation in academic forums or the interaction with personnel from other environmental units (3, 8). However, all demands directly related to the permitting process are distributed for analysis through the area coordinators. Hence, we observe that CGPEG is organized in a matrix structure associated to products. This means that those in charge of the permitting process, i.e. the coordinators, have authority over the workforce. Nonetheless, the civil servants organize themselves into functional groups – allowing for in-depth development of knowledge and skills of both the activity (production, drilling and seismic) and of different aspects of environmental permitting (pollution control, risk and emergency, among others). On the other hand, this requires the development of interpersonal skills and attendance to time-consuming meetings (Kates & Galbraith, 2007), not only for conflict resolution but also for shared decision making. Figure 4 summarizes this setting.

Figure 4: CGPEG's Organizational Structure (Source: Author's draft)



Both the formal structure and the functional groups have further details. For instance, part of the organizational substructure related to sector's activities (production and exploration) is divided geographically, seeking to promote knowledge of the affected environment. There are also other subdivisions, with some employees being responsible for specific processes and other employees dealing only with post-permitting activities. As for the functional substructure, there are different lines of action addressing environmental education; solid waste management; control of greenhouse gas emissions; and environmental monitoring programs, among others. Serrão (2012) discusses some of these fields of action in more detail. We note that this setting is dynamic and evolves continuously.

In general, one can argue that CGPEG has been fulfilling its functions satisfactorily, taking into account both the industry's deadlines and the interests of affected communities – pursuing environmental quality and technical improvement (3, 4, 6, 10, 13). It is a unit that develops its work through dialogue with other agents of the governance system and a proactive attitude (5, 8, 11). A factor that contributes to this performance is the profile of the technical staff, which is qualifiedⁱⁱ and has experienced professionalsⁱⁱⁱ among its ranks. However, there is still a great deal of progress to be made in improving its administrative area, management systems and accountability mechanisms (1, 3, 9). Table 1 shows positive and negative conditions that contribute to this situation.

Table 1 - CGPEG's Positive and Negative Characteristics (Source: Author's draft)

Positive Characteristics	Negative Characteristics
<ul style="list-style-type: none"> • Good work environment, with teamwork and shared goals among the personnel. • Maintenance of the workforce (highly experienced environmental analysts). • Open dialogue with the various stakeholders. • Search for continuous improvement and innovation via WGs and autonomy of the environmental analysts. • Establishment of analysis standards via technical directives that provide predictability to the permitting processes. 	<ul style="list-style-type: none"> • The administrative functions are unstructured, generating difficulties when managing information, in addition to precarious working conditions. • Non-professional management system, with a limited number of positions and lack of training in this area – as well as an absence of effective evaluation and monitoring instruments. • Scarcity of some technical profiles – an issue related to the way one becomes a civil servant: through general examinations.

At least two of these characteristics deserve to be highlighted: the permanence of employees for long periods of time, facilitating learning processes and the consolidation of dialogue platforms with external agents (5, 6, 10, 13); and the internal environment of cooperation which operates through a fairly horizontal manner of organization (1, 6, 7). The unit was able to structure a qualified technical staff that shares its knowledge, seeks consensus and the continuous improvement of its actions. Two factors that contribute to this setting are the environmental and ethical commitment of the civil servants, as well as the location of CGPEG in Rio de Janeiro, which not only congregates many of the organizations that deal with oil production, but also has universities that provide qualified technical personnel (1, 3). The distance from Brasilia, in turn, may have provided

a certain autonomy from political influences (3, 6). This in turn resulted in an administrative dependence on IBAMA's head office in Rio de Janeiro, which has deficiencies in its administrative support (CGU, 2014), resulting in recurrent problems with cleaning services, maintenance of the building, etc. Another critical aspect is that CGPEG's management is still rather unprofessional, possibly due to the lack of resources in this area and to an expressive growth in the permitting processes, leading to sluggishness in some actions (1, 3, 4, 9). In brief, barriers of the environmental governance system – such as the absence of the public sector in other spheres – add up to internal challenges, creating major difficulties in terms of organization and scope of action.

There is room for improvement. Risk aversion^{iv} on the part of environmental analysts maintains procedures based on the prescription of programs that do little in terms of effectively contributing to environmental quality. There are costly monitoring efforts, with potentially interesting results, that do not have a systematized methodology nor proper information organization in order to make it useful for stakeholders – mainly because the results are dispersed across multiple processes and documents. In this sense, one needs to seek modes of performance management and, to this end, it is fundamental to structure environmental databases and other information systems (3, 4, 10).

Thus, considering the similarity of projects, regional solutions can be consolidated, reducing transaction costs and enabling a more focused management of uncertainties and problems present in each situation. As an example, we observe the development of pioneering initiatives such as the Project for the Continuous Evaluation of Cumulative and Synergistic Effects (IBAMA, 2012). Another case is the Campos Basin Regional Characterization Project, which seeks to consolidate an environmental diagnosis of the area, allowing new EISs to be targeted in order to update critical issues and allow less time to be spent on the analysis of already known information.

Conclusions

Environmental permitting, as observed in CGPEG, fulfills the need of seeking cross-scale solutions, as indicated by Cash et al (2006). In this sense, CGPEG fulfills a strategic function by articulating the interests of several agents in the quest for environmental sustainability. Strengthening the links between State and society, without weakening the State's capacity of policy execution and coordination, is part of the governance challenge, as expressed by Diniz (1998). Considering the context, in which causal links are difficult to establish, the effectiveness of this system depends on an intelligent performance (3), integrating adaptive modes of management (Karkkainen, 2004) that seek to monitor the resource system, safeguard its resilience and continuously evaluate upcoming results (Berkes, 2005). It also depends on the coordination of stakeholders through a governance structure that represents fairly the different interests and worldviews.

It is worth highlighting some of the features that promote CGPEG's adequate performance in this system of environmental governance. Building trust among public servants - through team meetings, welcoming of new staff, events for bonding, etc. - facilitates the creation of a cooperative environment (3, 6, 7, 8). It is one of these cases where individuals

are able to learn from experience, organize themselves and transform the institutions that constrain them in common pool governance systems – as Ostrom (2009a) has pointed out. However, without the permanence of the system's actors, improvements would face significant barriers before consolidation. In this context, it should be noted that having a relatively small number of participants is positive, since it facilitates interaction, enabling face-to-face meetings and the knowledge of the constituents' reputation (3, 5, 6). Another important element is a matrix organizational structure (by product and by function) that, with well-defined responsibilities, can be a significant contribution to institutional innovation (4, 7, 8). For this to happen, a degree of autonomy is also important. This can be achieved by keeping a certain insulation from political entities, which in this case is expressed by the employment of civil servants selected through public examinations and the procedure of appointing managers who already belong to the unit's workforce (3, 4, 5). Thus, we observe in CGPEG the embedded autonomy posture advocated by Evans (2008), based on a bureaucracy approaching Weber's criteria – with a certain degree of corporatism, meritocracy and permanence in public service. Furthermore, personnel qualification is a significant factor that depends on the available learning systems, career attractiveness and the office's location (2, 3, 9, 10). A greater knowledge of the licensed activity allows the definition of fitting institutions. In this case, this enabled the regionalization of environmental programs and permits, as well as the unification of procedures through reference processes.

The following recommendations can be made for this system of environmental governance and for CGPEG in particular. With regard to the general institutional arrangement, it is important to move forward: (a) in the implementation of strategic instruments, addressing planning and the coordination of stakeholders in order to enable forms of *ex-ante* governance (1, 3, 4, 8, 12); (b) in the structuring of the administrative area of IBAMA, with the renewal of the workforce and investment in technology and information systems (4, 9); and (c) in management capacity, with allocation of specific resources for this area (1, 2, 3, 4, 8). Internally, we emphasize that good organizational practices and the institutional cooperation that has been identified must be carried on. However, more progress can be made in the monitoring of resources and actions through: (a) management systems; (b) use of indicators; and (c) other mechanisms of transparency and accountability (1, 4, 10). It is also worth investing in the relationship with other agents (3, 8, 12), specially within the scope of public policies related to different ministries, such as the control of invasive species (e.g. sun coral) and the preservation of sensitive environments (e.g. cold-water coral reefs).

In the end, the issue at hand is how to deal, within each sphere of action, with the three key elements of knowledge governance: (a) institutional coordination; (b) scope and policy choices; and (c) intrapolicy coordination and policy change (Burlamaqui, Castro & Kattel, 2012). In this way, the governance system can continue to improve, advancing amidst challenges that are inherent to a setting of environmental complexity and plurality of values.

Notes

- i Initiatives that help to build an environment where conflicts are considered and dealt with before tangible results occur.
- ii According to internal archives, more than 60% of environmental analysts have graduate degrees.
- iii According to a survey done, more than 60% of the environmental analysts have worked in IBAMA for more than 5 years.
- iv The uncertainty associated with the introduction of new institutions makes agents averse to experimentation, especially with regard to radical institutional changes (Kingston & Caballero, 2009).

References

- Barros, F. H. G. **Três Ensaio Sobre a Influência das Instituições na Governança Ambiental: Revisitando Aspectos Relativos a Comportamento dos Agentes, Crescimento Econômico e Políticas Públicas**. Doctoral Dissertation. Brasília: Universidade de Brasília, 2007.
- Barzel, Y. **Economic Analysis of Property Rights**. Cambridge: Cambridge University Press, 2. ed., 1997.
- Berkes, F. Conexões institucionais transescalares. In: Vieira, P. H. F.; Berkes, F.; Seixas, C. S. **Gestão integrada e participativa de recursos naturais: conceitos, métodos e experiências**. Florianópolis: Secco/ APED, p. 293-332. 2005.
- Brasil. Ministério de Meio Ambiente. **Portaria MMA N°411**, de 26 de outubro de 2011. Available at: <<http://6ccr.pgr.mpf.mp.br/legislacao/legislacao-docs/licenciamento/portaria-422-de-26-de-outubro-de-2011>>. Accessed: 23 apr. 2015.
- _____. Ministério do Meio Ambiente e Ministério de Minas e Energia. **Portaria Interministerial N°198**, de 5 de abril de 2012. Available at: <<http://www.icmbio.gov.br/intranet/download/arquivos/cdoc/biblioteca/resenha/2012/abril/Res2012-04-09DOUICMBio.pdf>>. Accessed: 25 jul. 2014.
- Bredariol, T. O. **Instituições e governança ambiental: o caso da Coordenação Geral de Petróleo e Gás da Diretoria de Licenciamento Ambiental do IBAMA**. Master Thesis. Rio de Janeiro: UFRJ, 2015.
- Burlamaqui, L.; Castro, A. C.; Kattel, R. **Introduction in Knowledge Governance. Reasserting the Public Interest**. The Anthem Other Canon Series, 2012.
- Cash, D. W. et al. Scale and cross-scale dynamics: governance and information in a multilevel world. **Ecology and Society**, 11(2): 8. [online] URL: <http://www.ecologyandsociety.org/vol11/iss2/art8/>. 2006.
- Cavalcanti, C. Economia e Ecologia: Problemas da Governança Ambiental no Brasil. **Revista Iberoamericana de Economía Ecológica**. Vol. 1: 1-10, 2004.
- CGPEG/DILIC/IBAMA. **Termo de Referência 02022.000002/2013**. Rio de Janeiro, 2013.
- _____. **Termo de Referência 02022.000008/2014**. Rio de Janeiro, 2014.

CGU – Controladoria Geral da União. **Relatório de Auditoria Anual de Contas: IBAMA – Sede, Exercício 2012**. Available at: <<http://www.ibama.gov.br/aceso-a-informacao/relatorio-da-controladoria-geral-da-uniao-cgu>>. Accessed: 18 nov. 2014.

CPJA/FGV – Centro de Pesquisa Jurídica Aplicada / Fundação Getúlio Vargas. **Desafios e oportunidades para o aprimoramento dos sistemas de licenciamento ambiental no Brasil: uma análise jurídica e institucional**. Available at: <<http://www.smartcitiesfgvprojetos.com.br/galeria/seminarios/desafios-e-oportunidades-para-o-aprimoramento-dos-sistemas-de-licenciamento-ambiental-no-brasil--uma-analise-juridica-e-institucional.pdf>>. Accessed: 30 sep. 2014.

CPROD/IBAMA – Coordenação de Produção da CGPEG/DILIC/IBAMA. **Parecer Técnico 02022.000674/2015-76**. Rio de Janeiro, 2015a.

_____. **Parecer Técnico 02022.000414/2015-09**. Rio de Janeiro, 2015b.

Diniz, E. **Reforma do Estado e Governança Democrática: em direção à democracia sustentada?** Available at: <http://www.ie.ufrj.br/aparte/pdfs/elidiniz_reforma_do_estado.pdf>. Accessed: 19 jun. 2014.

_____. Uma perspectiva analítica para reforma do Estado. **Lua Nova** (online) n.45, pp. 29-48. ISSN 0102-6445. 1998. Available at: <www.scielo.br/pdf/ln/n45/a03n45.pdf>. Accessed: 19 jun. 2014.

Evans, P. **In Search of the 21st Century Developmental State**. Working Paper 4. December 2008.

Fiani, R. **Arranjos institucionais e desenvolvimento: o papel das estruturas híbridas**. Texto para discussão / Instituto de Pesquisa Econômica Aplicada. Brasília: Rio de Janeiro: Ipea, 2013. Available at: <http://repositorio.ipea.gov.br/bitstream/11058/971/1/TD_1815.pdf>. Accessed: 23 oct. 2013.

Graaf, H. J.; Musters, C. J. M.; Keurs, W. J. Sustainable Development: looking for new strategies. **Ecological Economics** 16: 205-216. 1996.

IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis. **Licença Prévia N° 439/2012**. Brasília, 2012.

_____. **Nota Técnica Cgpeg/Dilic/Ibama N° 01/10**. 10 de fevereiro de 2010. Diretrizes para a elaboração, execução e divulgação dos programas de educação ambiental desenvolvidos regionalmente, nos processos de licenciamento ambiental dos empreendimentos marítimos de exploração e produção de petróleo e gás. Brasília, 2010.

_____. **Relatório de Gestão do Exercício de 2012**. Available at: <http://www.ibama.gov.br/phocadownload/aceso_a_informacao/relatorio_de_gestao_do_ibama_exercicio_2012.pdf>. Accessed: 30 nov. 2013.

Kardos, M. The Reflection of Good Governance in Sustainable Development Strategies. **8th International Strategic Management Conference**, doi: 10.1016/j.sb-spro.2012.09.1098. Elsevier, 2012.

- Karkkainen, B. C. Post-Sovereign Environmental Governance. **Global Environmental Politics**, 4(1), 72–96, 2013
- Kates, A.; Galbraith J. R. **Designing your organization: using the star model to solve 5 critical design challenges**. Jossey Bass Publishers, an Imprint of Wiley. 2007.
- Kingston, C.; Caballero, G. Comparing Theories of Institutional Change. **Journal of Institutional Economics** / Volume 5 / Issue 02 / pp 151-180, August 2009.
- Lustosa, M. C. J.; Cánepa, E. M.; Young, C. E. Política Ambiental. In: May P. H. (Org.). **Economia do Meio Ambiente: Teoria e Prática**. 2ª ed. Rio de Janeiro: Elsevier, 33:48, 2010.
- Mahoney, J. T.; McGahan, A. M.; Pitelis, C. N. The Interdependence of Private and Public Interests. **Perspective**. *Organization Science* 20(6), pp. 1034–1052, ©2009 INFORMS.
- Meadowcroft, J. Politics and scale: some implications for environmental governance. **Landscape and Urban Planning** 61, 169–179, 2002.
- Mendonça, G. M. A. **O Brasil licenciando e andando: as relações da política pública ambiental brasileira com a produção e a expansão capitalista do território**. Doctoral Dissertation. Rio de Janeiro: UFRJ, 2015.
- North, D. Institutions, **Journal of Economic Perspectives**, vol. 5, n. 1, pages 97-112, Winter, 1991.
- Ostrom, E. A diagnostic approach for going beyond panaceas. **Proceedings of the National Academy of Sciences of the United States of America**, 104(39), 15181–7. doi:10.1073/pnas.0702288104. 2007.
- _____. A general framework for analyzing sustainability of social-ecological systems. **Science (New York, N.Y.)**, 325(5939), 419–22. doi:10.1126/science.1172133. 2009b.
- _____. Background on the Institutional Analysis and Development Framework. **The Policy Studies Journal**, Vol. 39, No. 1, 7–27, 2011.
- _____. **Beyond Markets and States: Polycentric Governance of Complex Economic Systems**. Prize Lecture, December 8, 2009a.
- Paavola, J. Institutions and environmental governance: A reconceptualization. **Ecological Economics**, 63(1), 93–103. doi:10.1016/j.ecolecon.2006.09.026. 2007.
- Pinto, N. M.; Machado, C. J. S.; Vilani, R. M. Educação Ambiental: uma proposta para o fortalecimento da participação popular no licenciamento de atividades petrolíferas no Brasil. **Revista Políticas Públicas**, São Luís, v. 19, n. 1, p. 117-131, jan/jun. 2015.
- PROMINP – Programa de Mobilização da Indústria Nacional de Petróleo e Gás Natural. **Relatório Final: Aperfeiçoamento do Processo de Licenciamento Ambiental**. Available at: <http://www.prominp.com.br/data/files/FD/37/A0/B7/907D2410E0E40A2489A2D9A8/INDPG_08.pdf>. Accessed: 30 jul. 2014.
- Santos, L. F. D. **Descomissionamento de Sistemas Offshore**. Técnicas, Potenciais

Problemas e Riscos Relacionados ao Final da Vida Produtiva. Final Graduation Project. Rio de Janeiro: UFRJ, 2011.

Seifert, C. A. **A Governança Ambiental da Prevenção e Controle de Incidentes com Óleo nas Atividades Marítimas de Petróleo no Brasil**. Master Thesis. Rio Grande: UFRG, 2013.

Serrão, M. A. **Remando contra a maré: o desafio da educação ambiental crítica no licenciamento ambiental das atividades marítimas de óleo e gás no Brasil frente à nova sociabilidade da terceira via**. Doctoral Dissertation. Rio de Janeiro: UFRJ, 2012.

TCU – Tribunal de Contas da União. **Relatório de Levantamento de Auditoria: Auditoria no IBAMA**. Brasília: Fiscobras, 2009.

Teixeira, I. M. V. **O Uso da Avaliação Ambiental Estratégica no Planejamento da Oferta de Blocos para Exploração e Produção de Petróleo e Gás Natural no Brasil: Uma Proposta**. Rio de Janeiro, 2008. D.Sc. COPPE, Planejamento Energético, 2008.

Van den Bergh, J. C. J. M.; Truffer, B.; Kallis, G. Environmental innovation and societal transitions: Introduction and overview. **Environmental Innovation and Societal Transitions**, 1(1), 1–23. doi:10.1016/j.eist.2011.04.010. 2011.

Yin, R. K. **Estudo de caso: planejamento e métodos**. 2.ed. Porto Alegre: Bookman, 2001. Young, C. E.; Lustosa, M. C. J. A questão ambiental no esquema centro-periferia. **Economia**, Niterói (RJ), v.4, n. 2, p.201-221, jul./dez. 2003.

Submitted on: 05/06/2015

Accepted on: 27/11/2017

<http://dx.doi.org/10.1590/1809-4422asoc0090r1vu18L1AO>

2018;21:e00901

Original Article

INSTITUTIONS AND ENVIRONMENTAL GOVERNANCE: THE CASE OF ENVIRONMENTAL PERMITTING FOR OFFSHORE OIL AND GAS PROJECTS

Abstract: This work is an effort to link institutions and environmental governance, focusing on the Brazilian offshore oil and gas sector. A case study detailing the experience of an environmental unit of Brazil's federal environmental agency (*Coordenação Geral de Petróleo e Gás, Diretoria de Licenciamento, Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis – CGPEG/DILIC/IBAMA*) is used for this purpose. This unit is in charge of handling environmental permits for projects in this area. The methodology follows the institutional analysis and development framework as described by Ostrom (2011). Results reveal an environmental governance system characterized by the lack of policies that complement the issuing of environmental permits. In addition, we describe the institutional environment at CGPEG, demonstrating the existence of trust among its personnel. Finally, our conclusions indicate the importance of ensuring the permanence of the public staff, as well as the need to structure strategic governance systems.

Keywords: institutions; environmental governance; case study; public policy; environmental impact.

Resumo: Este trabalho explora o tema da governança ambiental por meio da teoria institucionalista. Para tal, vale-se de um estudo de caso da Coordenação Geral de Petróleo e Gás da Diretoria de Licenciamento do Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (CGPEG/DILIC/IBAMA), unidade responsável pelo licenciamento de empreendimentos de exploração e produção de petróleo e gás offshore. A metodologia utilizada se baseia no quadro conceitual da análise e desenvolvimento institucional, conforme descrito por Ostrom (2011). Dentre os resultados, primeiramente se apresenta o sistema de governança ambiental, caracterizado pela falta de políticas complementares ao licenciamento ambiental. Em seguida, aprofunda-se a análise nas instituições presentes na CGPEG, demonstrando a presença de laços de confiança entre o pessoal desta coordenação. Por fim, aspectos críticos e conclusões são elencadas, como a importância de mecanismos que favoreçam a permanência de servidores públicos e a necessidade de estruturar meios de governança estratégicos.

Palavras chave: instituições; governança ambiental; estudo de caso; políticas públicas e meio ambiente; meio ambiente e impactos ambientais.

Resumen: Este trabajo intenta establecer vínculos entre instituciones y gobernanza ambiental, centrándose en el sector brasileño de petróleo y gas *offshore*. Con este fin, hace un estudio de caso de la *Coordenação Geral de Petróleo e Gás, Diretoria de Licenciamento Ambiental, Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (CGPEG/DILIC/IBAMA)* que concede licencias para emprendimientos en este ámbito. La metodología sigue el marco del análisis y desarrollo institucional, como descrito por Ostrom (2011). Se describe el sistema de gobernanza ambiental, marcado por la falta de políticas complementarias al licenciamiento ambiental. Luego, se profundiza el análisis de las instituciones presentes en CGPEG, lo que demuestra la presencia de confianza entre el personal de esta coordinación. Finalmente, aspectos críticos en las dos unidades de análisis indican la importancia de mecanismos que favorezcan la permanencia del personal **en la administración pública**, así como la necesidad de estructurar sistemas de gobernanza estratégica.

Palabras clave: instituciones; gobernanza ambiental; estudio de caso; políticas públicas y medio ambiente; medio ambiente y impactos ambientales.

ANNEX I - INTERVIEW SCRIPT

Topic n°1: Background

Subtopics:

1. Do you know the history of CGPEG?
2. How do you assess its progress?
3. What about the history of environmental governance of offshore oil and gas undertakings?
4. Did learning take place?

Topic n°2: Environmental Governance

Subtopics:

1. What are CGPEG's main functions in the environmental governance of offshore oil and gas activities?
2. What are the main tools in this context?
3. How do you evaluate CGPEG's performance? What assessment criteria would you consider?
4. How does CGPEG fit into the broader governance system?
5. What are the limiting institutions?
6. Who defines the collective choice institutions?
7. Are institutional responsibilities well defined?

Topic n°3: Institutional Foundations of the Governance System

Subtopics:

1. What are the main external factors that contribute to this setting?
2. What are the main internal factors that contribute to this setting?
3. How is CGPEG organized (leadership, planning, implementation, monitoring, learning and adaptation, coordination, and participation)?
4. How does the institutional structure work? Does it need to be refined?
5. Are there gradual sanctions?
6. Are there means for conflict resolution?
7. What are the relevant formal practices?
8. What are the relevant informal practices?
9. Is the staff qualified to carry out this activity?

10. Is there sufficient information?
11. Are the training systems adequate?
12. Is there room for institutional innovation?
13. Are the rules appropriate to their context?
14. Do the various levels interrelate?
15. Does the functional body have enough personnel to exercise the functions properly?
16. Is there a plan with managerial and individual goals? Is it feasible? Are the goals attainable?
17. Is there any stress in the performance of work?
18. Are there any motivation elements (career plan, identification, etc.)?
19. Does reputation matter?
20. How do CGPEG's decisions reflect back on itself?

Topic n°4: Critical Aspects

Subtopics:

1. What are the main flaws of the environmental governance system in which CGPEG is operating?
2. What are the main strengths of this system?
3. What could be better? How?
4. Are there conflicts that are more meaningful? Which ones?