


CHALLENGES FOR UPGRADING SOCIAL AND TECHNICAL PARTICIPATION IN THE REGULATION OF THE NEW DIGITAL ECOSYSTEM*

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- **ABSTRACT:** This paper analyses the social and technical participation in upcoming technologies in the new digital ecosystem. The first section describes how the Brazilian National Telecommunications Agency (Anatel) is an excellent example of the subject. The second section criticizes the concept of societal participation using the current literature; the intermediary conclusion is that the concept of social and technical participation is more suitable than that of social control. The third section brings in data as a basis for a theoretical debate; the theory indicates that qualitative analysis is essential in assessing the effectiveness of public consultations. The subject demands more than quantifying. The fourth section has four suggestions to improve social and technical participation that might benefit all regulatory bodies. The article concludes that some improvement will be necessary to address the current scenario of uncertainties and instabilities. The regulation of future technologies will require realignment in both public policy and the law.
- **KEYWORDS:** Regulation; new technologies; social participation; technical community; digital ecosystem.

DESAFIOS PARA MELHORAR A PARTICIPAÇÃO SOCIAL E TÉCNICA NA REGULAÇÃO DO NOVO ECOSISTEMA DIGITAL

- **RESUMO:** O artigo analisa a participação social e técnica nos processos regulatórios de tecnologias emergentes, relacionadas com o novo ecossistema digital. A primeira parte descreve como a Agência Nacional de Telecomunicações (Anatel) é um exemplo no tema. Na segunda parte é feita a crítica do conceito de controle social, com base na literatura nacional e internacional. A conclusão intermediária é que o conceito de participação social e técnica é mais adequado. A terceira parte traz um levantamento de dados para basear um debate teórico. É frisada a necessidade de estudos qualitativos para aferir as consultas públicas, para além da quantificação. A quarta parte traz quatro sugestões de melhoria que podem ser usadas em todas as agências reguladoras. A conclusão do artigo é que essas melhorias de gestão serão necessárias, em razão de contexto de



incertezas e instabilidades. A regulação das futuras tecnologias exigirá a reconfiguração das políticas públicas e do direito.

- **PALAVRAS-CHAVE:** Regulação; novas tecnologias; participação social; comunidade técnica; ecossistema digital.

1. Introduction

This article must start by indicating that regulating telecommunications, new information and communication technologies is intertwined with scientific and technological innovation. This preliminary statement is necessary because this text demonstrates that social and technical participation is crucial in encouraging more significant and better scientific and technological innovation. It, therefore, helps both sectors, which are increasingly overlapping. To support this point of view, the literature review by Bridget M. Hutter and Joan O'Mahony is worth checking out:

(...) CSOs have a long history; since the rise of the modern state elected governments have used, or relied upon them, as a source of regulation. The first CSOs to have a major influence on business regulation were associated with the temperance movement in the UK and the US. Later opportunities for CSOs to have an impact on policymaking emerged in Western Europe in the 1970s, alongside the growth of corporatism. And there were, even then, direct relationships amongst private or non-state groups where the government's role was at most facilitating (...). Over the past decade, the role of CSOs has become significantly more prominent. (...). CSO regulatory activities operate diversely at local, national, and international levels. They try to influence governmental and corporate agenda-setting to include and promote regulatory objectives. (...). Their relationship with governments and businesses varies widely. They may be consensually incorporated into the political process. (...). However, relations between civic groups, governments, and corporations may also be highly antagonistic. (...) In pursuing their objectives, CSOs employ a number of techniques with the intention of exerting democratic pressure. They can play a key role in providing information, analysis, and policy alternatives to state regulators. (...) At the most basic level, they report 'the facts' and hope to influence, or indeed to create, opinions according to their own interpretation and ambitions. (...) They operate at formal and informal levels. Formally, they are regularly included in national and international delegations. (...) Lewis and Wallace believe there is great potential for these organizations to suggest alternative ways of thinking and trigger innovation (Hutter; O'Mahony, 2004, p. 3, p. 5).



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The openness of regulatory bodies and entities to social and technical participation allows for several benefits in the resulting regulations. The authors, cited directly, mention three primary functions civil society organizations can perform (Hutter; O'Mahony, 2004). The first is the collection of information. Regulatory entities and bodies need as much information as possible to produce quality analyses on regulatory processes. The second function is setting standards to define performance metrics or establish technical limits. The third function is dialogical and refers to persuading the regulated sector to modify its behavior. A good example is the National Telecommunications Agency (Anatel) of Brazil, which already has a management system and legal framework for social and technical participation.

Nonetheless, it is vital to improve this openness to enhance its pro-innovation potential. There are numerous reasons for achieving this objective, such as following the outlined path. They are, in a non-exhaustive list: (1) to analyze the history of Anatel's permeability to regulatory debate, as an example, seeking to debunk some myths in the literature; (2) to revisit concepts used in both literature and practice related to regulatory processes; (3) to critically analyze social and technical participation based on empirical surveys, to discuss concepts of social participation; and finally, (4) to suggest, from the analytical perspective, four ways to enhance regulatory relations concerning social and technical participation.

The first topic will be a brief historical and normative analysis of Brazil's General Telecommunications Statute (Federal Statute No. 9472/1997, LGT) and Anatel. From its inception, it will become clear that its model provided several formal channels for interaction between the regulatory body and society. This interaction has only increased over the years, with the addition of new forms of dialogue and the improvement of systems. However, a problem persists in using "social control." This issue will be the second topic addressed. The approach will be to analyze the sometimes-confusing concepts: "social control" and "social and technical participation." A theoretical debate will follow an analysis of empirical research on public consultations and hearings. Initially, the theoretical focus will be on the internal inconsistencies of the conclusions of the studies analyzed. This issue happens because the concept of "social control" reproduces some normative, non-empirical assumptions. Moreover, it becomes clear that quantitative research alone on participation, as a means of assessing the effectiveness of this "social control," can lead to analytical errors.

After the criticism, it will be possible to shift the focus to "social and technical participation." This third topic deals with expanding the capacity of regulators to engage



with civil society entities, the business world, and researchers, whether from formal or independent institutions. It will begin with a short mapping, covering one year, of Anatel's interlocutors in public consultations from 2022 to 2023. These consultations show effective participation, demonstrating an organizational culture in telecommunications regulation that fosters openness to dialogue. This diagnosis demonstrates that the core of the concept of responsiveness, which underpins social and technical participation, lies in openness to relationships and interactions. The regulatory process does not require the concept of "social control" or "democratic deliberation" as its central point. Neither of these concepts – when translated into managerial structures – guarantees responsiveness. Social and technical participation is a set of social, relational, and interactive processes that demand transparency, openness, and tangible results. Therefore, its analysis must be qualitative. Social and technical participation requires legal and managerial structures, but its effectiveness depends on how it happens.

The fourth and final topic will address four suggestions, which can be simplified as follows. The first is to propose targeted support or other incentives for social and technical participation, ensuring that it is not limited only to actors with greater capacity for action. The second suggestion is to incorporate social and technical participation in the later stages of public policy design, particularly in the results monitoring phase. It will also suggest that these functions be integrated into an existing regulatory unit or create a specific unit. Then, we suggest the promotion of more convergent regulation, with the assignment of teams for dialogue between regulatory agencies, entities, and bodies, focusing on scientific, technological, and regulatory innovation themes. This trend is already in Federal Statute No. 13.848/2019 (Act of Regulatory Agencies). However, it is necessary to continue formalizing this convergent action and adequately assess the broader dissemination of its existence and practices. Finally, we suggest the creation a regulatory foresight unit for innovation. The role of this unit is to bring together qualified personnel with multiple backgrounds to interpret and produce reports on future regulatory scenarios. Those modifications are urgent due to the rapid advancement of challenges in the digital ecosystem. All these suggestions are directly linked to the three primary functions Bridget M. Hutter and Joan O'Mahony (2004) identified. This article concludes that the current regulatory landscape is uncertain and unstable. Thus, the debate is not limited to whether "there should be more or less regulation." The central point is that it is increasingly necessary to have qualified personnel in regulatory agencies to forecast and evaluate future crises and problem scenarios, which by virtue



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of their current nature, they cannot predict. Nevertheless, they must be observed and monitored. Social and technical participation is an excellent means to enable regulatory action through its accelerated transformation if used to its potential.

2. Social and technical participation in the origin of Anatel and its relevance today as a useful concept for regulatory innovation

Anatel has had the provision of social and technical participation as one of its founding characteristics since its conception while drafting the original bill that would become the General Telecommunications Statute (LGT) (Brazil, Chamber of Deputies, 1995). One example is the creation of a Consultative Council, whose role is to assist in the development of essential public policies for the telecommunications sector, as highlighted in the Minister of Communications' commented submission of the bill to Congress:

To ensure the participation of state powers and society in overseeing the regulatory body, the Consultative Council was conceived, an organism composed of representatives from the Legislative and Executive branches and from entities representing society, as defined in the regulation (Art. 32). The Consultative Council is responsible for advising on the general permitting plan and the service universalization goals plan, providing counsel on the establishment or elimination of a given service under the public regime, and reviewing the annual reports of the Board of Directors (Art. 33). Members of the Consultative Council will not receive remuneration. They will serve a three-year term, with reappointment prohibited. The terms for the initial members of the Council will be one, two, and three years, ensuring that one-third of the Council's members are replaced annually (Art. 34) (Brazil, Anatel, 1997, p. 41).

The Consultative Council also had a function that, at the time, was labeled by doctrine as the “social control of the agency” (Marques, 1996). The Council was complemented by the Ombudsman, according to the statute at the time of its enactment (now the repealed sole paragraph of Article 45):

Art. 45. (...). The Ombudsman shall have access to all matters and will receive the necessary administrative support, being responsible for producing, biannually or when appropriate, critical assessments of the Agency's performance, forwarding them to the Board of Directors, the



Advisory Council, the Ministry of Communications, other Executive Branch bodies, and the National Congress, making them public for general knowledge (Brazil, 1997).

This institutional configuration was modified by Federal Statute No. 13848/2019, also known as the “Regulatory Agencies Act,” to provide more uniform contours for regulatory modeling. It complemented Federal Statute No. 9986/2000, which established some common frameworks for agencies and addressed the careers plans of the staff in these entities. In the past, the characteristic of “social control” was aligned with creating social, scientific, and technical interaction spaces in regulatory processes and reorganization, seen in various countries worldwide in the 20th century (Majone, 1994). Today, this model of agency regulation has become almost ubiquitous, at least in the Western world. However, the LGT, since being signed by the President, already espoused social participation in the following provisions:

TABLE 1 • PROVISIONS OF THE GENERAL TELECOMMUNICATIONS STATUTE (LGT) THAT PRESCRIBE SOCIAL AND TECHNICAL PARTICIPATION

| Legal provision | Content | Comments |
|-----------------|---|--|
| Art. 19, III. | To draft and propose to the President of the Republic, through the Minister of Communications, the adoption of the measures referred to in items I to IV of the previous article, submitting those related to items I to III to public consultation beforehand. | It mandates the holding of public consultations to shape the National Telecommunications Policy. |
| Art. 18, I. | To establish or eliminate the provision of a service modality under the public regime, whether concurrently with its provision under the private regime or not. | Art. 18. Chapeau: It is the responsibility of the Executive Branch, through a decree, by the provisions of this Law. This includes the reassessment of the National Telecommunications Plan. |
| Art. 18, II. | Approve the general plan for service concessions provided under the public regime. | |
| Art. 18, III. | Approve the general plan of targets for the progressive universalization of services provided under the public regime. | |
| Art. 19, XXX. | Periodically review the plans listed in items II and III of the previous article, submitting them to the President of the Republic through the Minister of Communications for approval. | |

(continue)



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TABLE 1 • PROVISIONS OF THE GENERAL TELECOMMUNICATIONS STATUTE (LGT) THAT PRESCRIBE SOCIAL AND TECHNICAL PARTICIPATION (continuation)

| Legal provision | Content | Comments |
|-------------------------------|--|--|
| Art. 35, chapeau, I e II. | The Advisory Council is responsible for (...) providing opinions, before forwarding them to the Ministry of Communications, on the general plan for service permits, the general plan for targets for the universalization of services provided under the public regime, and other government telecommunications policies and (...) advising on the establishment or elimination of service provision under the public regime. | The elements of items I and II of Article 18 must include the opinion of the Advisory Council. |
| Art. 42. | Drafts of normative acts will be submitted to public consultation and formalized by publication in the Official Gazette of the Union. Criticisms and suggestions must be reviewed and remain available to the public in the Library (repealed). | Requires the holding of prior public consultations by Anatel to issue regulatory rules and normative acts. Other acts do not necessarily require this, such as the application of sanctions. A non-exhaustive list of rules and normative acts is found in Articles 19 and 22. |
| Art. 19, IV. | Issues regulations regarding the permitting, providing, and enjoyment of telecommunications services in the public regime. | |
| Art. 19, X. | Issues regulations on the provision of telecommunications services in the private regime. | |
| Art. 19, XII. | Issues regulations and standards regarding the equipment used, to be followed by telecommunications service providers. | |
| Art. 19, XIV. | Issues regulations and standards to ensure compatibility, integrated operation, and network interconnection, including terminal equipment. | |
| Art. 22, VI. | Issues regulations on matters within the Agency's jurisdiction. | |
| Artigos 88 e 89, chapeau & I. | Public service management concessions will require a public bidding process. The Agency will regulate the bidding process according to this Statute's constitutional principles and provisions. (...). The draft of the convocation instrument will pass through prior public consultation. | Bidding processes for public service management concessions require public consultations. |
| Art. 195, chapeau. | After being submitted to public consultation, the model for the restructuring and privatization of the companies listed in Article 187 will need prior approval by the President of the Republic. The Minister of Communications will establish a Special Supervision Committee, responsible for coordinating and monitoring the resulting acts and procedures. | A public consultation must also precede privatization. |

SOURCE: MADE BY THE AUTHORS', BASED ON BRAZIL (1997).



It is relevant to note that the enactment - and the coming into effect - of Federal Statute No. 13848/2019 repealed Article 42 of Federal Statute No. 9472/1997. This derogation happens because the more recent legal provision established, in Article 9, a general model for public consultations and hearings, applicable to all regulatory agencies covered by the law:

Art. 9: The following will be subject to public consultation prior to decision-making by the board of directors or the collegiate board: drafts and proposals for amendments to normative acts of general interest to economic agents, consumers, or users of the services provided.

§ 1: Public consultation is the decision-support tool through which society is consulted, in advance, via the submission of criticisms, suggestions, and contributions from any interested parties regarding proposed regulatory norms applicable to the regulatory Agency's sector of activity.

§ 2: Except when a specific legislation, agreement, or international treaty requires a different deadline, the public consultation period will begin after the respective notice or opening announcement is published in the Official Gazette and on the Agency's website and will last a minimum of 45 (forty-five) days, except in exceptional cases of urgency and relevance duly justified.

§ 3: When the public consultation begins, the regulatory Agency must make available, at its headquarters and on its website, the regulatory impact report, studies, data, and technical materials used as the basis for the proposals submitted for public consultation, except for confidential materials.

§ 4: Criticisms and suggestions submitted by interested parties must be made available at the Agency's headquarters and on its website within ten business days after the end of the public consultation period.

§ 5: The regulatory Agency's response to the criticisms or contributions presented during the public consultation process must be made available at the Agency's headquarters and on its website within 30 (thirty) business days after the meeting of the board of directors or the collegiate board for final deliberation on the matter.

§ 6: The regulatory Agency must establish the procedures for public consultations in its internal regulations.

§ 7: The relevant body in the Ministry of Economy is responsible for providing an opinion, when deemed appropriate, on the regulatory impacts of drafts and proposals for amendments to normative acts of general interest to economic agents, consumers, or users of the services provided, as submitted for public consultation by the regulatory Agency (Brazil, 2019).

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Additionally, Federal Statute No. 13848/2019 establishes the requirement for public hearings and/or consultations for general issuance of regulatory acts. These acts require, unless justified exceptions apply, the preparation of a preliminary Regulatory Impact Analysis (RIA):

Art. 6: According to regulations, the adoption and proposals for amending normative acts of general interest to economic agents, consumers, or users of the provided services will demand a prior Regulatory Impact Analysis (RIA), which will include information and data on the potential effects of the normative act.

§ 1: Regulations will specify the RIA's content and methodology, the minimum criteria to assess, the cases in which its implementation will be mandatory, and those in which it allows waving.

§ 2: The internal regulations of each Agency will detail the implementation of the RIA within its scope.

§ 3: The board of directors or collegiate board will express its opinion regarding the RIA report on the adequacy of the proposed normative act to the intended objectives, indicating whether the estimated impacts recommend its adoption and, where applicable, what additional measures are necessary.

§ 4 The opinion referred to in § 3, along with the RIA report, will be part of the documentation made available to interested parties for consultation or public hearings should the board of directors or collegiate board decide to proceed with the administrative procedure.

§ 5 In cases where the RIA is not conducted, at a minimum, a technical note or equivalent document that justifies the decision proposal must be made available. (Brazil, 2019).

It is worth noting that Chapters III, IV, V, and VI of Federal Statute No. 13848/2019 (Articles 25 to 35) emphasize the need for coordination and cooperation. This cooperation must occur between federal regulatory agencies, as well as with competition defense bodies, consumer protection agencies, environmental protection agencies, and with regulatory agencies or bodies from other federative units (States, Federal District, and municipalities). This need also arises in complex environments such as the European Union (EU), where regulatory regulations require Member States to cooperate and overall coordination. In the EU, this phenomenon occurs for efficiency reasons and primarily to mitigate the risks of "regulatory arbitrage." This concept refers to the potential actions of a company or other regulated entity in the EU Single Market – though



not exclusively within it – to choose the most favorable jurisdiction for itself in regulatory terms (Pollman, 2019). A final note on Federal Statute No. 13848/2019 and its impact on Anatel includes item XXXII in Article 19 of the LGT. It requires the Agency to: “periodically reassess the regulation to promote competition and adapt to technological and market evolution” (Brazil, 1997).

In summary, it is possible to see, at Anatel’s origin, the establishment of the legal foundation for what would become a general model for regulatory agencies. However, in terms of effectiveness, this trajectory has not been straightforward. Some criticisms have been directed, over the years, at the processes of public consultations and public hearings. Some of these criticisms have led to societal beliefs that doubt the actual evaluation of the openness of regulatory processes. Examining this literature will be the focus of the next section.

3. “Social Control”: an imprecise and normative concept

A first example is necessary to introduce the topic of regulatory process openness based on its application in other countries. Binenbojm (2005) draws a historical parallel between the institutionalization of regulatory agencies in the United States and the Brazilian process. He explains that in the United States, there was a strong movement of criticism against the agencies established at the end of the 19th century and the beginning of the 20th century. This movement led to various interventions by the Executive, Legislative, and Judicial branches in those agencies:

Over the years, however, due to (i) the increasing degree of intrusiveness of agencies into private activities, (ii) their questionable efficiency in managing regulated markets, and (iii) their exemption from traditional electoral accountability mechanisms, independent agencies have faced intense criticism and pressure from political and economic agents. Thus, the central topic of discussion regarding agencies in the United States has long since shifted from their autonomy – as a condition for the technical and politically neutral exercise of their functions – to quickly becoming their political control, social responsiveness, and democratic legitimacy. It is no coincidence that, in recent decades, there has been a rise in political control mechanisms by the President, Congress, and the Judiciary over the agencies, as well as an increase in the instruments of participation by economic agents and consumer and environmental defense



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entities in regulatory processes. The American regulatory experience of the second half of the 20th century shows that the counterpoint to the enhanced autonomy of regulatory agencies was the increase in political, legal, and social control mechanisms. These mechanisms were implemented in various ways by the three branches of government and by organized economic and social groups. Such mechanisms are crucial, on the one hand, to reduce the risk of capture of regulatory entities by well-organized agents or economic groups and, on the other hand, to increase the degree of social responsiveness and democratic legitimacy of the regulatory function (Binenbojm, 2005, p. 150, 152).

The historical trajectory of institutionalizing regulatory agencies in the United States initially had to go through a phase of bureaucratic closure. Although not entirely immune to societal life, this closure was necessary to establish a technical space. Only later did the model come under scrutiny, and there was a significant wave of intervention to balance technical autonomy with openness to external influences. It is important to note that the concept of social control, as brought forth by Gustavo Binenbojm (2005), is intertwined with political and legal control. The boundary between political and social control of civil society organizations is unclear. However, the term control was frequently used in the literature of the period in Brazil.

Another example is the doctoral thesis by Paulo Todescan Lessa Mattos (2006). It is one of the first substantial academic works that analyzed data from Anatel's public consultations. Based on the collected data, the author was critical regarding the effectiveness of social participation mechanisms at that historical moment. He concluded that public consultations had great potential to enable the participation of civil society organizations. However, this potential was not fully effective:

Thus, the results of the empirical research demonstrated that the public participation mechanisms adopted by Anatel have democratic potential, especially considering the characteristics of state regulatory action in Brazil before the 1990s reforms. However, these potentials have not yet been fully realized, given the identified democratic deficits. Therefore, these deficits are related to institutional problems that can be corrected. Regarding the dynamics of civil society participation in the Brazilian public sphere in the definition of public policies in the telecommunications sector, the research showed that other relevant actors, not just representatives of private business interests, have utilized the existing public participation mechanisms. This data highlights a democratic potential for greater participation and oversight of



regulatory bodies, particularly by those actors capable of stimulating public debate on relevant issues in Brazil's public sphere (Mattos, 2004, p. 20).

Mattos introduces the concept of public participation. The author also uses the concept of control. However, the theoretical advancement is evident. The data from Paulo Todescan Lessa Mattos's pioneering research appear in other studies, with similar diagnoses regarding potential flaws in the process of openness. The first update is the study by Juliana Ferreira de Oliveira, Tayná Cruz Batista, and Fernanda Filgueiras Sauerbronn. According to the authors, this research would demonstrate that there is negligible permeability of the proposals from public consultation participants in the outcomes of regulatory processes during the period they analyzed:

This study aimed to analyze the participation of social actors in Anatel's public consultation mechanism from 2010 to 2013. The findings show that Service Providers are the most prominent participants in contributions to Anatel's Public Consultations. However, regarding the number of distinct participants, the results must align with the participation in submitting contributions. User Representatives are the least numerous participants, while those classified as 'Other Participants' are the most numerous. Regarding Anatel's analyses, the Agency reviewed about 42% of the contributions submitted during the studied period. Among the analyzed contributions, Anatel rejects a significant portion of the submissions from interested parties. By participant category, the telecommunications service providers have the largest share of accepted contributions, and those classified as not accepted. On the other hand, public institutions have the fewest accepted contributions and the most rejected ones (Ferreira de Oliveira; Batista; Sauerbronn, 2015, p. 14).

One of the objectives of the research conducted by Ferreira de Oliveira, Batista, and Sauerbronn was to identify the absorption of proposals by segments in public consultations. Despite the initial indication that telecommunications service providers would be the most active in consultations, the research shows some parity regarding accepting contributions. Telecommunications service providers make more proposals than others. A higher number of them are accepted. Public institutions make fewer proposals and have a lower number of them accepted. In general, there is little acceptance of most contributions. This conclusion could lead to the belief that Anatel resists social and technical participation. However, a strict and definitive diagnosis of the



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dynamics needs a detailed analysis of each proposal and the reasons for its acceptance or rejection. Quantitative analysis is helpful, but it has its limits.

Another update is the work of Ricardo Matheus, presented at an academic event in 2009, where he criticized the fact that there were few online consultation opportunities available to the public at regulatory agencies in general (Matheus, 2009, p. 11-12). The topic of remote participation will reappear in this article in a later section. However, it is worth noting that the diffusion of the Internet in 2008 was much lower and very different from that in 2023 and beyond. Online communication tools can expand social and technical participation. However, they are associated with two obstacles: The first is digital exclusion in terms of infrastructure, meaning that a portion of the population does not have significant access to the Internet for participation. The second obstacle is digital literacy, meaning that significant access alone does not guarantee that the population can fully utilize the infrastructure. Finally, in 2018, Paulo Costa Gomes and Aline Sueli de Salles Santos investigated and specifically criticized Anatel for not having sufficient “social control” in the following terms:

Regarding Anatel’s social control, despite the existence of procedures such as the Consultative Council, the User Council, the Ombudsman, the Service Channels, the Citizen Information Service (SIC), the Telecommunications Users Defense Committee (CDUST), Public Hearings, and Public Consultations, societal participation in the social control procedures adopted by this Agency remains low or, in many cases, non-existent. The most significant contributions come from regulated companies rather than from citizens or representative bodies. Thus, when it comes to actions aimed at achieving more effective societal participation in the social control of regulatory agencies, Anatel, in the case of telecommunications, should play the role of facilitator by providing the necessary information for understanding the topic (Gomes; Santos, 2018, p. 251-252).

Two elements of synthesis follow. The first is conceptual. It no longer seems reasonable to use the concept of “social control” today to define “social and technical participation” in regulatory matters. Even the authors mentioned before blend the concepts of “social control” and “society’s participation.” The second element of synthesis is factual. Discarding the normative intent that “civil society” should control regulatory processes makes it possible to diagnose the need for increased qualified participation from civil society and the technical and scientific community in



Anatel's regulatory processes. This need has only grown over the years. It is not only the occasional acceptance of suggestions that should mark the evaluation of the issue. Opening these processes creates the opportunity for an expanded debate on regulation, as Bridget M. Hutter and Joan O'Mahony (2004) emphasize in describing the three primary functions of social and technical participation in regulatory processes: gathering information, establishing standards and parameters, and modifying behaviors.

It is worth analyzing the topic from a conceptual perspective. First, the two concepts – “social control” and “social and technical participation” – are not synonymous. From the initial design of regulatory agencies in Brazil, social control was the possibility for civil society to be aware of regulatory processes. In this way, society could exert pressure on the agencies, albeit in a clear and organized manner. The repeated contributions of participants in consultations and public hearings indicates that there is this social control over the agencies. The previously cited works demonstrate a paradox.

On the one hand, they criticize the idea of greater social control. However, at the same time, they highlight that the sources for evaluating data on “social control” are clear and accessible. The processes are not opaque. The transparency of the “social control” mechanisms shows their clarity. It is possible to imagine multisectoral entities that contain a plurality of agents based on criteria of the origin of their components (technical community, civil society, the state, among others) but which, at the same time, do not have any institutional or formal openness to external influences. This hypothetical model would be closed representativeness, like an association from a particular economic sector where only members of the chosen group can contribute. Thus, the processes' “social control” is compromised due to low transparency. This misuse is why “social control” no longer seems suitable for inclusion in debates about regulatory processes regarding openness and transparency.

Another reason for this derives from a theoretical assessment. As previously described, “social control” tends to blur two important sociological concepts: social actor and regulatory arena. It expands the understanding that agencies are regulatory arenas where there should be – by design – equity of action among those involved in regulatory processes. This perspective downplays the reality that a specialized technical and administrative body is also a collective actor, even though it is not necessarily homogeneous. Therefore, if an agency or regulatory entity has a qualified, active technical body with reasonable autonomy, it will tend to shape regulatory management. This transformation positions the Agency or regulatory entity as an actor with varied



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weight. According to current literature, the view that regulatory entities are “spaces of dispute” for regulatory options is outdated. Contemporary theories no longer identify agencies or regulatory entities as “arenas,” which – normatively, in the political sense – should be tendentially neutral spaces for deliberation. Instead, they suggest that agencies or regulatory entities are significant regulatory actors in shaping regulation. Thus, the concept that an agency should be subject to control, measured by the quantitative acceptance of proposals in public consultations, is not the best solution.

There are many ways in which various participants engage in regulatory processes. According to Robert Baldwin and Julia Black, both Günther Teubner’s concept of regulatory trilemma (1983; 1986; 1987) and Phillippe Nonet and Phillip Selznick’s view of responsive law (2017) are insufficient for underpinning a theory that deals with the complexity of regulation in contemporary terms. These flaws come because both theories define regulatory processes as centered on agencies and regulatory entities, viewing them more as “arenas of dispute” or as the productive focus of “single-axis” rules that the regulated entities should absorb. In the specific case of Phillippe Nonet and Selznick, their concept of responsiveness is too broad, whereas, in Günther Teubner’s model, the separation between the state and society is excessively distant (Baldwin; Black, 2007, p. 16-17). The shift that Robert Baldwin and Julia Black propose is to work with analyses of attitudes, which always have relational dimensions. This change of focus opens a new avenue in understanding regulatory processes:

Adopting a really responsive regulation viewpoint also stresses the importance of dealing with attitudinal settings and institutional environments, not least the organizational infrastructure of the regulatory regime. In many regulated areas, the multiplicity of regulatory responsibilities stands in the way of practical assessment and modification. A good deal may be achievable in such areas by clarifying institutional frameworks and lines of regulatory responsibility across state, quasi-regulatory, and corporate boundaries. To argue this is not to reject the message of smart regulation. This theory mixes instruments and institutions that provide the best regulatory systems. It proposes avoiding unproductive fragmentations. The really responsive regulation perspective also shows how important it is to take on board how the logic of different regulatory mechanisms interact and tend to do so in distinct ways according to the particular regulatory enforcement task. (...) It thus avoids the ‘single axis’ difficulty and draws attention to the challenge of operating through coherent regulatory logics – ways of combining controls within culturally or organizationally variant modes of relationship. (Baldwin; Black, 2007, p. 41-42).



This analysis makes it possible to consider the “social control” concept in the regulatory process as overly simplistic. After all, there are various forms of “social control.” For example, there are internal “social controls.” The functional bodies of regulatory entities and agencies are part of society, thus rejecting the normative assumption that the state and society are radically separated. There are also external “social controls.” Users or consumers can resist regulation in various ways, which can even lead to regulatory changes. Empirical research has diagnosed this phenomenon (Veronese, 2015, 2011).

In summary, the regulatory reality is much more complex. The use of interaction channels is part of an extensive range of processes in which those regulated or involved create and maintain relationships with regulators. Ironically, the concept of “social control” appears to be based on some assumptions that are not empirically verifiable, as they are normative assumptions.

The first assumption is that control of regulation by civil society will always be beneficial. This assumption does not come from a self-evident truth. Furthermore, the very definition of civil society is complex. The same applies to other sectors, such as the business sector, as demonstrated in empirical research on the development of Federal Statute No. 12965/2014, known as the Internet Civil Framework (Veronese; Fonseca, 2021).

The second assumption is that by measuring the greater or lesser acceptance of proposals through social participation methods such as hearings and consultations, it will be possible to highlight the “capture of the regulator” by some segment. However, a single accepted proposal can be more significant than hundreds of others with a much smaller impact. In other words, mere quantification does not address substantive questions about the complexity of these interactive processes.

The third assumption is that establishing a deliberative democracy space as a goal for regulatory processes to be efficient is necessary. Robert Baldwin and Julia Black indirectly challenge this idea by criticizing the theoretical and abstract analyses of Günther Teubner and Jürgen Habermas. The separation between the “system” and the “lifeworld,” as conceptualized by Jürgen Habermas, creates a very rigid model. While it is a good starting point, it lacks empirical analysis of situations and social interaction conditions. From a public policy perspective, these normative assumptions can help construct potential legitimacy models based on quite rigid concepts of democracy.

Nonetheless, it is essential to emphasize that contemporary democratic theory includes technical spaces as elements of democracy, as Pierre Rosanvallon (2008) describes well. His work addresses constitutional courts, state agencies, and regulatory

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techniques. In summary, the concept of “social control” in regulation appears to simplify processes that are much more complex when viewed through the concept of “social and technical participation.” In the next section, we will present a brief empirical study. Its aim is not to evaluate the democracy, or lack thereof, of public consultations nor to make any other value judgments. It will demonstrate that there are social and technical participation channels. Following this, there will be further conceptual criticism. Those critiques are essential, as these concepts still hover over the various proposals for regulating the digital ecosystem.

4. A map of stakeholders and the importance of social and technical participation

The beginning of this section will present a map of participation in public consultations. Federal Statute No. 12848/2019 provides 45 days for anyone to contribute by making submissions through the public consultation channels regarding regulations drafted by Anatel. A total of 62 public consultations by Anatel, which have already concluded, were analyzed throughout 12 months (from June 2022 to June 2023).

In this sample, a total of 689 suggestions were submitted, with participation from approximately 159 members of civil society (individuals and legal entities – unions and associations) and 60 legal entities. The following is a list of the legal entities: Associação Brasileira de Emissoras de Rádio e Televisão (Abert); Associação Brasileira de Rádio e Televisão (Abratel); Associação Brasileira de Provedores de Internet e Telecomunicações (Abrint); Associação Brasileira de Telesserviços (ABT); Amazon Kuiper Brasil Ltda.; Associação Nacional dos Fabricantes de Veículos Automotores (Anfavea); Associação Comunitária de Comunicação e Cultura de Colorado (Paraná); Brisanet Serviços de Telecomunicações Ltda.; Broadcom Inc.; Canal Brasileiro da Informação Ltda. (CBI); Cisco Systems Inc.; Claro S/A; Sindicato Nacional das Empresas de Telefonia e de Serviços Móveis Celular e Pessoal (Conexis); DGM Tecnologia, Planejamento e Treinamentos Ltda.; Direta Telecomunicações Ltda.; DRJ Radiocomunicações Ltda.; Associação Nacional de Fabricantes de Produtos Eletroeletrônicos (Eletros); Embraer S/A; Fibrasil Infraestrutura e Fibra Ótica S/A; Forte Freguesia Telecomunicações, Comércio e Serviços Ltda.; Fundação Educacional e Cultural de Ipanema (Minas Gerais); General Motors do Brasil Ltda.; Globo Comunicação e Participações S/A; GSM Association; Huawei do Brasil Telecomunicações Ltda.; Hughes Telecomunicações do Brasil Ltda.;



Inmarsat Brasil Satélites Ltda. (Eireli); Instituto Bem-Estar Brasil; Intel Semicondutores do Brasil Ltda.; Kofre Representação e Comércio de Telecomunicações Ltda.; Led Telecom Engenharia e Telecomunicações Ltda.; Matarazzo Consultoria, Treinamentos e Assuntos Regulatórios Ltda.; Maxserv Comércio, Locação e Assistência de Equipamentos Eletrônicos Ltda.; Facebook Serviços Online do Brasil Ltda. (Meta); Oi S/A (em recuperação judicial); Oneweb Capacidade Satelital Ltda.; Petrobrás Petróleo Brasileiro S/A; Polícia Militar do Estado de São Paulo; Proware 2000 Telecomunicações, Som e Imagem Ltda.; Qualcomm do Brasil Ltda.; Rede TVS de Telecomunicações Ltda.; Secretaria de Estado de Meio Ambiente e Desenvolvimento Sustentável de Minas Gerais; SES DTH do Brasil Ltda.; Sociedade Brasileira de Engenharia de Televisão (SET); Sindicato Nacional de Empresas de Telecomunicações por Satélites (Sindisat); Siscom Telecomunicações Ltda.; SKY Serviços de Banda Larga Ltda.; Soluções Inteligentes em Telecomunicações Ltda. (Solintel); Sony Brasil Ltda.; Swarm Brasil Satélites Ltda.; Telefônica Brasil S/A; Televisão Guaíba Ltda.; Televisão Lages Ltda.; Tim S/A; Trc Telecom Ltda.; TV Leste Ltda.; TV Nova Conexão Ltda.; Utc América Latina; Vale S/A; Viasat Brasil Participações Ltda.; and Viasat Brasil Serviços de Comunicações Ltda.

In some of the suggestions submitted during the consultations, only the individual proposer's name is public without indicating their represented organization or entity. However, the text, in certain instances, specifies a company or associational entity, in those situations, the mapping considers legal entities. Actual individuals should be filling an individual role, additionally, some entities had more than one contribution. Therefore, the list above is not precisely numerical, it is also essential to recognize that individuals, associations, or companies may represent different interests than those initially identifiable. For example, a civil society organization might defend a company's interests. The empirical recommendation for this type of analysis is always to use qualitative methodologies for detailed descriptions. As extensively discussed in previous sections, mere quantification can lead to analytical errors.

The analysis of public consultations shows adequate participation from the social and technical environment related to telecommunications, interpreted in terms of infrastructure and to access services. However, some companies and associations from somewhat more diverse areas also attend the consultations and provide suggestions. The volume of participation in a consultation or public hearing does not occur solely due to the openness, that is, the possibility of involvement. It is related to the topic and its presence in everyday life from the supply side. On the demand side, participation



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requires social and technical engagement linked to the participants' intellectual, economic, and social capacities to act (preparation).

As indicated at the beginning of the text, Bridget M. Hutter and Joan O'Mahony (2004) analyze three significant functions for civil society organizations' social and technical participation in regulatory processes. They are cautious in outlining the limits and addressing the separation between civil society, the state, and economic sectors, as they clearly interact. However, the aim of this division is analytical, in order to make it clear that there are specific roles that can be played by civil society in regulatory processes. It is legitimate to criticize the labeling of a nonprofit association civil society when it is supported by industry. Similarly, it is acceptable to critique the existence of a so-called "pure" civil society entity that advocates for specific economic interests. It is worthwhile to subdivide the three functions into several sub-functions. This analysis employs an analytical base that focuses on the actions performed rather than just the labels given to the actors.

The first function is the collection of information. This function can help one understand the social and economic environment. It can occur locally, nationally, regionally, or internationally. It can take place at all three stages of public policy: (1) during the design and implementation, (2) in monitoring, and (3) in evaluating results. Finally, this information can provide sources for managerial, scientific, and technological innovation.

The second function is the establishment of parameters or standards. Bridget M. Hutter and Joan O'Mahony illustrate this relevance by setting pricing policies for vehicle access to central London in the United Kingdom. This process involved several public consultations, with participation ranging from local cyclists' associations to major industries. Another example is the collaboration between civil society organizations and industry to set ethical standards for clothing production and to less environmentally harmful packaging for food products. They also explain that various international organizations, such as the World Bank and the EU, interact with civil society organizations to establish legal, technical, and regulatory parameters or standards.

Finally, the authors explain a typical characteristic of civil society organizations' actions: the attempt to alter behaviors, especially of businesses. They cite various actions by these entities, local, regional, national, or global. A central point is the discussion in the text about the best way to integrate civil society organizations into regulatory processes to prevent specific issues from becoming part of judicial disputes:



CSOs [civil society organizations] may also become involved in a formal process aimed at behavior modification. For example, when CSOs find persistent non-compliance with regulations, they may become directly drawn into the formal legal system. A notable example is their involvement in private legal actions to pursue regulatory objectives. Since 1970, the US government has allowed private parties to pursue non-compliant firms not pursued by state regulatory authorities. It also gave the public a right to speak in enforcement decisions and provided them with reimbursement of expenses incurred. The number of these citizen's suits has dramatically increased since the 1980s. (...) [Some] view these mass actions in the environmental domain as private organizations' attempts to take over regulation administration. Rather than representing private enforcement in pursuit of private wrongs, these actions are primarily about the content of public policy and the routine enforcement of cases. The actions aim to change polluters' behavior by changing compliance incentives (Hutter; O'Mahony, 2004, p. 7-8).

The involvement of civil society organizations is desirable when it comes to contemporary regulation. Social and technical participation can assist regulators in many ways. As already stated, it is not a matter of "social control" but instead of regulatory cooperation in a dialogical and responsive manner. This dynamic is discussed by Bridget M. Hutter (2006) in another text on the same subject. In the conclusion of this discussion text, she explains that most analysts advocate for a regulatory mix that encompasses both private and public sources of regulation to maximize the potential of each sector. Furthermore, she emphasizes that this does not imply a complete separation between the state and other actors. In her words, in our translation:

Taking all of this together, it is perhaps not surprising that most regulatory commentators argue for a regulatory mix - embracing both state and non-state sources of regulation - to maximize the potential of each sector. Indeed, we should remember that governance at a distance does not imply complete severance between the state and other actors. Often, the state acts in partnership with civil and economic institutions through regulatory partnering, which involves overseeing or sharing regulatory responsibilities. Regimes of enforced self-regulation, for example, typically involve the state harnessing corporate regulatory capacity with enforcement and oversight remaining with state authorities (Hutter, 2006, p. 14-15).

The two cited texts align with the situational analysis that regulation in the United Kingdom was undergoing a transformation, summarized by Christel Koop



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and Martin Lodge (2020) as a shift from “responsible regulation” to “responsive regulation”. Their research relies on twelve semi-structured interviews with regulators, seeking information on the “politicization of regulation.” The “technical insulation” model was no longer feasible. However, their diagnosis did not foresee an immediate solution to incorporate some political dimension into regulatory processes. Nonetheless, the analytical model of the problem is interesting, particularly the summary table presented below:

TABLE 2 • SUMMARY OF THE RESULTS FOUND

| Characteristic | Responsible regulatory state | Observed changes |
|--|--|--|
| Relationship of the agencies with the government | Trust placed (<i>trustee</i>) | Change in favor of the acceptance of areas of mutual interest, as well as the definition of the respective roles. |
| Nature of accountability | Done <i>a posteriori</i> and based on results, with reports to the supervising ministry or department. | Change in favor of accepting areas of mutual interest and defining the respective roles. |
| Emphasis on the process of creating regulatory decisions | Competition to increase efficiency and enhance consumer and user welfare. | Change to encompass the diverse needs of consumers and users, particularly concerning vulnerability. |
| Key instruments | Economic analysis | Change towards increasing consumer and user engagement in communication. |
| Regulatory framework | Technical | There has been a shift towards regulation as a tool for addressing the political system’s demands (for example, lower energy prices, reduction of carbon emissions, increased broadband in regions). |
| Basis of legitimacy | Better economic results | Change towards responsiveness to address broader and differentiated public needs and demands. |

SOURCE: MADE BY THE AUTHORS’, ADAPTED FROM KOOP AND LODGE, 2020, P. 1622.

There is evident pressure to improve the interaction between state regulators and civil society. Once again, the conceptual model of social control should be understood today while taking into consideration the growing demand for increased social and technical participation in regulatory processes, such as in regulatory impact assessments (Cristóvam; Gondim; Pereira de Sousa, 2020). Those studies support the 1988 Brazilian Federal Constitution and various legal frameworks in different economic and social sectors (Barbosa da Silva; Jaccoud; Beghin, 2005). However, it is worth



noting that it is unreasonable to assume the existence of a single and effective model for facilitating social and technical participation. This problem arises because certain regulatory processes require specific engagement from civil society organizations, while others may need different forms of involvement. In a broad study conducted in G20 countries, Helmut K. Anheier, Markus Lang, and Stefan Toepler conclude that different situations and sectors demand differentiated legal frameworks. Their research focused on finding general functions where there could be alignment between the state and civil society on regulatory issues. They list four points for discussion, two of which are worth mentioning here:

Does the country value social self-organization in general and, in particular, a relatively independent civil society ready to challenge and confront those in power if necessary? Or does it prefer a top-down social order with an emphasis on control? How countries define these issues will impact any regulatory framework for civil society organizations as associative entities and their role in social engagement.

Does the country view services provided by civil society as responses to government and market failures in offering goods of a quasi-public nature when demand is heterogeneous? Or are civil society organizations, for the most part, seen as extensions of government and governance, regarded as a versatile tool for distributing state services that governments wish to offload? Again, the type of regulatory framework for civil society organizations in the provision of services, as nonprofit entities focused on public welfare, will depend on how each country addresses these issues. (Anheier; Lang; Toepler, 2019, p. 14).

Finally, Kathryn Hochstetler (2012, p. 368-369) offers a critical analysis of social participation in Global South countries. She explains some myths. The first myth is that there would be, empirically, a technical isolation of regulatory agencies, bodies, and entities by the state. According to her, this would be impossible, as regulators are also within the social world, where political interactions occur, as Mariana Mota Prado details in her study on Brazil (2013). This myth is rhetorical. The second myth refers to civil society as a uniform aggregate. Analyzing Global South countries would reveal the dimension of diversity and the fact that a significant portion of society could not participate in the regulatory process. This issue would lead to a “regulatory exclusion,” a concept we coined; neither Hochstetler (2012) nor Prado (2013) used it. Any solution



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or suggestion for increasing social and technical participation needs to consider these two myths.

The following section will propose some suggestions to enhance the quality and quantity of social and technical participation in regulatory processes, considering the transformations occurring in Brazilian society, which align with many other countries worldwide. The contemporary scenario of rapid transformations requires the introduction of regulatory tools to foster innovation in management, science, and technology.

5. Suggestions for coordinating regulatory relations and interactions

We can now move on to the second topic of this article, which concerns the practical need to suggest ways to increase and improve social and technical participation in regulatory processes. The goals for this are: (1) to implement the search for new institutional solutions; (2) to better define the object of regulation in scenarios of reasonable uncertainty; (3) to foster regulatory cooperation among various agencies and multiple regulatory entities, in harmony with other social actors.

Public debate - whether through traditional political representation channels or technical and scientific expertise - cannot be disregarded. It has the potential to improve regulatory processes. Specialized debate - through legal channels such as public consultations and public hearings - also plays a significant role in achieving the three objectives mentioned above. The central issue is identifying new regulatory objects and modifying existing processes based on (1) the best available information and (2) interactive debate among the various stakeholders involved in regulatory processes. Addressing this issue will be essential for defining new regulatory regimes for future objects and implementing changes in current regimes to adapt to social, economic, technological, and scientific transformations. A recent Organisation for Economic Co-operation and Development report highlighted this practical overview (OECD, 2022). This final substantive section will offer four managerial suggestions. These are not exhaustive. After all, the very conception of increasing social and technical participation aims to broaden contributions on this topic. Furthermore, the suggestions start with a broader one and conclude with a more specific one.



5.1 Convergent and responsive regulation: fine-tuned administrative competencies

The preliminary factual argument is that the regulatory landscape is undergoing evident transformations. Some aspects of this landscape can be addressed based on already-known evidence. However, as with scientific and technological development, other aspects are subject to shifts influenced by various factors. This characteristic of future indeterminacy, based on the sociology of science, is described by Bruno Latour (2011) through an analogy with the mythic Roman god Janus. This god has two faces and represents transformations. One face looks towards the past; the other looks towards the future. Latour uses this imagery to critique the traditional historical approach to science. This approach often involves describing results, such as the discovery of a vaccine or the solution to a scientific problem (a model for inorganic chemistry), without considering the social factors and scientific debates occurring at the time. Thus, multiple future explanations or hypotheses may exist when constructing a particular scientific discovery or technological development. However, the expert community determines a winning explanation or hypothesis at the end of the social, technical, and scientific debate. The table below shows those social processes.

TABLE 3 • ELEMENTS OF SCIENCE IN ACTION, BY BRUNO LATOUR

| Janus' Maxims | Finished science (past) | Science in the making (future) |
|---------------|---|--|
| First | “Accept the facts without discussion.” | “Discard the useless facts.” |
| Second | “Always go with the most efficient machine.” | “Decide what constitutes efficiency.” |
| Third | “When the machine works, everyone will be convinced.” | “The machine will work when the interested parties are convinced.” |
| Fourth | “What is true always holds up.” | “When things hold up, they begin to transform into truth.” |

SOURCE: MADE BY THE AUTHORS', ADAPTED FROM LATOUR (2011).

A synthesis of Bruno Latour’s proposal facilitates the understanding of his theory. As a sociologist of science, he aims to demonstrate that various social factors are involved in determining knowledge consolidated by experts. These factors are not only within the scientific and technological world in a strict sense. They also exist in other social spaces, such as the political and economic realms. This distinction is crucial for understanding the difference between science in development and science after its



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production. The author does not claim that these external factors determine scientific and technological knowledge at the end of the production process.

On the contrary, he aims to alter the way the sociology of science analyses those phenomena, showing that it is imperative to consider these other social spaces while shaping the future. This sociology of science helps to recognize that a wide range of influences need to be incorporated, for example, into technological forecasting. After all, there is a vast and indeterminate set of facts and phenomena that are not yet understood by contemporary science or the limits of human reason (Yanosofsky, 2013).

These lessons apply to the concept of future regulation. The legal and administrative regulation framework will need to become more adaptable to follow transformations closely. Additionally, intensive forecasting of influences will be necessary to assist in shaping the legal and administrative framework. This process cannot be limited to just one regulatory agency. It should involve interaction with other regulatory agencies and increased engagement with the Brazilian system of science, technology, and innovation. The development of this regulatory forecasting model should consider adapting the competencies of the involved entities and bodies. Potential overlaps, whether arising from regulatory objects with apparent convergence or from indeterminate factors, should not impede the definition of future regulation. In this regard, the LGT, in its current form, clearly mandates the adaptation of regulation and aligns with Chapters III, IV, V, and VI of Federal Statute No. 13848/2019 (Articles 25 to 35). As mentioned at the beginning of the article, those chapters imperatively indicate the need for coordination and cooperation.

This coordination can be understood as managerial innovation to address future regulation. Therefore, the suggestion is to enhance dialogue within and outside the Brazilian federal government. This coordination happens through a permanent forum, a council, or other managerial solutions. The following sections will elaborate on this suggestion.

5.2 Anatel's opening up as practical examples of promoting social and technical participation and their expansion

As indicated at the beginning of this text, Anatel has several historical examples through which it built its practice of social and technical participation. This trajectory



is valuable and relevant to the current scenario of transformations. How can its efficiency be expanded? The main obstacle to increasing social and technical participation concerns the substance of the debates. Some parts of society and economic actors need help to stay updated with the premises of the topics under discussion. There are several ways to facilitate this increase in social and technical participation. For a long time, international literature has focused on new communication methods for this purpose (Zavestoski, 2006; Coglianese, 2006). Indeed, openness to participation becomes less effective when the qualifications regarding the substance of the debate are not higher. One way to enhance this efficiency is to expand the means of education for potential participants in future regulatory debates. Producing general educational materials can help; various entities and regulatory bodies worldwide use this solution. The use of online materials is a good solution. These can include booklets and short courses, among others, in addition to maintaining existing channels. Furthermore, primary education of society can expand through partnerships with entities aligned with the regulatory mission to increase the dissemination of new regulatory agendas. However, this mission is challenging in a world with intense competition for people's attention.

5.3 Incorporation of social and technical participation in monitoring results

Several departments within Anatel and other regulatory entities already use surveys of users to assist in monitoring the effectiveness of their various actions. As previously indicated in this article, this is an essential function of social and technical participation according to international literature. Therefore, expanding the channels for discussing result monitoring will be very useful in increasing the sample sizes and perceptions and refining new methodologies for analyzing results.

As emphasized in the first suggestion, the path diverges into increasing dialogue between agencies, entities, and departments of the federal Brazilian government and expanding dialogue channels with civil society organizations and businesses. Choosing the most efficient management approach to achieve this goal will require a debate within the government. Two broad scenarios can emerge. The first is the cross-cutting strengthening of management competencies across various departments and entities to maintain a structured dialogue with society and the technical community. The second is forming a - transversal - working group or sector to promote this dialogic approach concerning result monitoring.



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A relevant point on this topic is the need to translate the complexity of regulation to ensure better understanding by citizens, civil society organizations, and the business world, which is not necessarily specialized. One solution is disseminating literacy about regulation. This dilemma is reflected in practical terms, by the difficulty in communicating science, technology, and innovation (Albagli, 1996). This field requires a particular level of proficiency to avoid excessive simplification of inherently complex topics. Similarly, communicators need special skills and competencies to translate such complexity into the simplest form possible.

5.4 An administrative unit to coordinate and disseminate regulatory cooperation, with a prospective role for managerial, scientific, and technological innovation

The final suggestion encompasses and organizes the previous three. It is worth recalling that the first suggestion pertains more to changes in the mode of operation, in general terms, *i.e.*, to the substance. The second indicates the possibility of expanding existing means and increasing the availability of channels. The third relates to the possibility of enhancing the actions of regulatory entities and bodies to promote the expansion of social and technical participation, which could be an active effort to increase demand. The fourth suggestion refers to establishing an administrative unit to manage these processes.

It seems reasonable to suggest structuring a specific working unit to achieve the complex mission described throughout the text, combined with the need to enhance the capacity for prospecting managerial, scientific, and technological innovations. Again, the best way to accomplish new missions might be through a transversal approach, such as a working group, as well as by establishing a specialized unit with contributions from various others. This suggestion does not imply that existing working units will cease contributing to prospecting managerial, scientific, and technological innovations. However, assigning this specialized function to a group of personnel with multidisciplinary training and experience would aid in its dissemination and execution. This topic has been addressed by the federal government under the rubric of innovation labs in the public sector (Tonurist; Kattel; Lember, 2017; Sano, 2020). This debate underscores the importance of discussing managerial organization within regulatory entities and bodies, as partly discussed earlier in this article.



It is worth reiterating that these suggestions are not exhaustive and are also not a recipe for effectiveness. These social processes are permeated by the perspective of openness, meaning that it is imperative to value social and technical participation.

6. Final considerations

A frequent message from industry - and other economic sectors - is that the State should avoid regulating digital and emerging technologies too early. The message warns of the risk of stifling innovation in its infancy. However, the State and regulators must continue to engage with the issue of early technology regulation. After all, important issues are at stake, such as those related to security, risks, and benefits of innovation and the development of adequate regulatory capacity. Upcoming technological advancements requiring regulatory action include Artificial Intelligence, quantum technologies, and synthetic biology, among others. Thus, it is imperative to signal the country's commitment to a vision of scientific, technological, and innovation development with a long-term focus.

Today, a growing sense of multiple crises triggers turbulence, instability, and insecurity in contemporary societies. Crises accumulate and interact unpredictably, impacting economies, politics, the environment, and global affairs. Even seemingly contained crises, such as the Covid-19 pandemic, are complex, with effects that are difficult to predict and solve in the long term. This situation presents policymakers with high uncertainty, complexity, and ambiguity. Therefore, public policies and regulatory dynamics must be more anticipatory, systemic, inclusive, and innovative.

However, only a state and government prepared to respond to known risks and uncertainties can effectively play this role. Good preparation requires long-term investments in research, development, training, and enhancement of technological infrastructure. However, that alone is not enough. It is also necessary to build solid relationships in "normal times" between those responsible for handling crises and that have the capacity and intelligence to identify, monitor, and assess emerging risks and potential responses.

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