

Use of Design Thinking by the Regulator in the process of applying Public Hearings in the electricity sector.

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Abstract— *The article analyzes the role of Public Hearings - PHs in shaping Regulation in the electricity industry in Brazil. A total of 1,077 PHs were examined where the Government, represented by the Regulator (National Electric Energy Agency – ANEEL), consulted civil society in the period from 2010 to 2019. The statistical survey separated agents by category, in order to better understand the leading role that each typology plays in the electricity sector industry. The article ends with an analysis of the use of the concept of Design Thinking - DT in the methodology of interaction with those interested in participating in Public Hearings. The DT can act in the integration of solutions between the themes proposed in the PHs, serving as an integrating agent in the simplification of regulatory policies.*

I. INTRODUCTION

Public Hearings (PHs) are mechanisms intensively used by the Government in the formulation of public policies normally related to the executive power. These instruments have become particularly useful for collecting society's opinions and data, aiming at the well-being and continuous improvement of regulation. In this article we will designate both tools as AP, except when explicitly detailed as CP for a specific analysis purpose.

There are countries with a great tradition in holding Public Hearings, such as the United Kingdom and the United States, the first of which has more than two hundred years of history of holding PHs.

The United States inherited the practice, from the time of its colonization, of holding Public Hearings from England and integrated it into its legal system, making it

an important instrument of popular participation, heavily influenced by the Common Law¹.

Society's behavior and opinions have always influenced government decision-making and the elaboration of regulatory standards. For this, the governors can use the PHs (Poddar, 2017) as one of the forms of citizen participation.

Not only countries considered developed, but developing ones such as Mexico, Brazil and India represent some examples of countries that also hold public hearings.

Taking India as an example, it is recorded that since 1997 public hearings have been held to discuss environmental issues, which is one of the first issues in the country to have society's participation after independence (Poddar, 2017).

¹ Common Law is a legal system used in English-speaking countries. Its main characteristic is that it is based on precedents created from case law and not statutes.

In the electricity sector, the Central Electricity Regulatory Commission (CERC), an Indian Regulatory Agency which, although founded in 1998, only started its process of public hearings in 2013. By comparing this performance with that of Brazil, the National Electric Energy Agency (ANEEL) began discussing PHs in 1998, two years after their constitution.

In Brazil, the obligation to hold a public hearing in the legislative process or even before it for certain matters is based on the Federal Constitution in the following articles: 5th, item XXXIII, which ensures the right to information; art. 58, § 2, item II, which guarantees the holding of public hearings in the Congress Commissions, applied by symmetry to states and municipalities (Piesanti, 2014).

The evolution of society and public administration in holding Public Hearings will increasingly demand popular participation in matters ranging from those that generate the greatest impact to matters of interest to a local minority.

II. PURPOSE

During the last decade, between 2010 and 2019, the National Electric Energy Agency - ANEEL proposed 1077 opportunities in which representatives of society could contribute to the improvement of the Brazilian Electric Sector - SEB.

Considering this universe, the objective of the research work was to analyze both qualitatively and quantitatively the PAs. The survey analyzed the participation of contributing agents represented by certain groups in society in search of defending their own interests.

Finally, after surveying and analyzing qualitatively and quantitatively the data tabulation, it was possible to map the deficiencies, and thus propose as an improvement the incorporation of the concepts of Design Thinking - DT as a standard tool in the preparation of SEB Public Hearings.

III. METHODOLOGY

The methodology used was the empirical basis from real data from 1,077 Public Hearings held in the period 2010 to 2019. Statistical data on PHs were obtained directly from the ANEEL website and compiled in order to allow quantitative analysis over the last decade.

Also, the fundamentals and processes applied to the DT were used to propose improvements throughout the chain, from the beginning to the conclusion of a PH.

IV. REASONS FOR PROPOSING PUBLIC HEARINGS

The need to hold a Public Hearing can be motivated by multiple reasons, listed below: (i) comply with the law; (ii) obtain information about citizens; (iii) provide information to citizens; (iv) improve public decisions or programs; (v) improve acceptance of decisions about programs and public policies; (vi) altering the role of political power and resource allocations; (vii) respond to citizens' concerns; (viii) assisting difficult public decisions; (ix) obtain political advantage; (x) seek collaborative solutions to problems (Mater, 1984).

In many cases, the government uses more than one of the reasons described, because there is a need to propose an improvement in a given norm, at the same time it can improve decisions on public policy programs and seek collaborative solutions with society.

A concept that can be used in the preparation of a proposal by the society is the use of "Advocacy". As a definition, "Advocacy" is used as a synonym for defending and arguing in favor of a cause. It is a process of claiming rights that aims to influence the formulation and implementation of public policies (Sabatier, 1988).

In addition to the definition of "Advocacy", its application usually through structured actions (texts, articles, web sites, events, lectures, interviews, among other mechanisms of interaction with the target audience), aims to gain sympathy and support from society towards a belief, public policy goal or project. Eventually, "Advocacy" strategies can be built for actions in opposition to a certain theme (Silva, 2019). The practice of "Advocacy" may arise from these representations and from the strategy chosen in the presentation of a certain regulatory issue.

"Advocacy" fits very well when used in conjunction with society's contributions in PAs, since the process allows for improved regulation. By organizing themselves, segments of society develop a structure and strategy in the area of action when they participate in PAs to defend specific interests.

Control is needed so that the objective is not lost, and the "Advocacy" could be used in order to serve the interests of certain groups, generally those most powerful in exerting influence in the elaboration of regulatory norms. It is a fact that does not contribute to the essence of "Advocacy": improving regulation in favor of a cause.

Strategy and tactics are needed to discuss and present contributions at Public Hearings. First, knowing in depth the problem to be discussed is the first step in defining the strategy. Then, it is necessary to choose the methodology

of how to develop the subject with the government and society impacted by the proposal (Mater, 1984).

An appropriate tactic defined together with the strategy can be the difference in the success or failure in the presentation of ideas in the proposed normative improvement in a PA. In certain situations, when an issue is controversial or a consultation with society may not bring the result expected by the Regulator, it is interesting to use a useful tactic: do not take any action for a certain period causing a certain issue, when approached in a Hearing Public, in the future, will not be remembered by many in society. Taking no action is also a strategy to be followed by the Regulator (Mater, 1984).

Finally, once the approach strategy and execution tactics have been defined, it is necessary that communication with all those involved is also defined in order to ensure successful contributions to the Regulator (Mater, 1984).

Fig. 1 schematically shows the approval cycle of contributions in public hearings considering an ideal methodology.

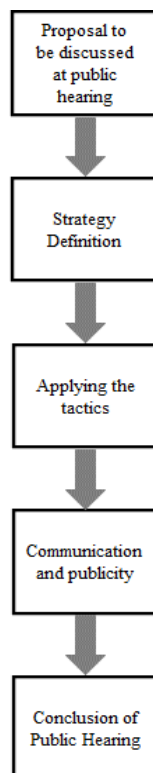


Fig. 1- Stages of holding a Public Hearing

Once a Public Hearing is proposed, in a macro way, Fig. 2 shows the stages of its realization.

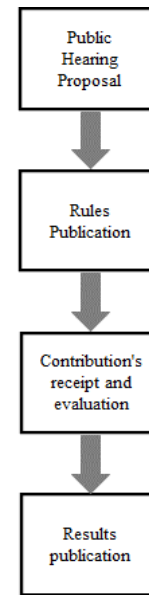


Fig. 2 - Stages of carrying out a Public Hearing.

First, the proposal for a public hearing is conceived by the Regulator. It contains the proposed regulation, its justification and other items that justify the proposal.

Once the initial items are defined, the PH is published to the society. In the publication are the deadlines and form for contribution, and if in person, the place and date of the meeting. This step consists of how the contributions will be received by the Regulator.

The next step is to receive contributions and review them. Just as the company makes the contribution and justifies any change in the original proposal, the Regulator must justify whether each of the proposals was considered and its justification for acceptance or not.

The conclusion of the process is the publication of the proposed regulation containing the contributions sent and approved by the society.

V. PUBLIC HEARINGS - AN INTERNATIONAL VIEW

The following is a vision of countries where PHs have been tools used by public authorities for centuries and constantly contribute to regulatory improvement.

5.1 PUBLIC HEARINGS IN THE US

The United States has a robust history about PHs. During the early years of the US colonies, various forms of participatory, representative, and inquiry hearings were written into federal and local law. Today, more than 97% of local governments hold public hearings, open by law to all US residents (Holliday, 2018).

American social behavior and culture have a great influence on the formation of the legal system. In meetings to debate issues that impact the entire local society, the contributions made by residents consider their lifestyle, customs, upbringing and the way they were inserted into society (BLACK, 2009). Looking at American customs and history, public hearings are "the purest form of democracy that ensures that all political decisions are in the public interest, as no intermediary is placed between voters and public decisions." (Holliday, 2018)

It is possible to find the participation of the population in practically all spheres of government, which have communication channels to receive suggestions from society and inform the holding of public hearings. Regulatory bodies such as the Federal Energy Regulatory Commission (FERC) hold periodic sessions, providing opportunities to suggest improvements in regulation, new utility programs or new assessment standards to be applied to the performance of a concessionaire (RAP, 2011).

As quoted by (Holliday, 2018) "society's participation provides effective monitoring and control of local affairs, even when participants are not managed by committees, subcommittees and even elected councils - public bodies that generally produce opaque processes, non-binding agreements and poorly marketed advertisements and meeting."

It is possible to find several Public Hearings on subjects ranging from the conception of laws to the internal organization of US regulatory agencies. The objective is always to guarantee the participation of society in improving regulation (National Democratic Institute for International Affairs, 2000).

In the United States there is the National Association of Regulatory Utility Commissioners (NARUC), a non-profit organization, founded in 1889, dedicated to representing the members of state public service commissions that regulate utilities that provide essential services such as energy, telecommunications, energy, water and transport (NARUC, 2020). NARUC provides a venue to define and influence public policy, share best practices and promote solutions to improve regulation. It created a system of commissions so that each US state has representatives who will defend the best interests of regulation.

As an example, in the electricity sector there is the electricity committee that develops and promotes the supply of reliable, adequate and affordable electricity. Through strong collaboration with FERC and related federal agencies, the Committee also seeks ways to improve the quality and effectiveness of regulation through the provision of knowledge to any citizen, cooperation and information exchange (NARUC, 2020).

As an association whose objective is to improve regulation, NARUC uses public hearings to improve regulation independently.

The federative and participatory history of society in the United States is a very important factor that has contributed to the development of public policies and services that offer quality and improve conditions for the population.

5.2 PUBLIC HEARINGS IN THE UNITED KINGDOM

As previously mentioned, the PHs had their experimentation started in the United Kingdom in the 18th and 19th centuries to carry out the process of delimiting public land. Commissions were formed to listen to society's considerations on land delimitation. It was one of the first examples of a public hearing and emphasizes how most public hearings are used today when dealing with public land and private property (Kemp, 1988).

From 1948 onwards, the UK began a series of regulations in various sectors. Among other topics, it can be exemplified with equal remuneration and sex discrimination (1970), the industrial relations law that introduced the concept of unfair dismissal in 1971 and the legislation related to health and safety at work in 1974.

In 1983, with the conservative party winning the elections, a deregulation process was initiated. Several documents recommended anti-regulatory processes, from the preparation of a structured analysis of the impact of the proposed legislation, to the costs and benefits, on companies (Deregulation 1948-2006, 2020).

As an initiative to improve the English regulatory process, the Better Regulation Task Force (BRTF) was created in 1997, whose basic principles were:

Proportionality - Regulators should intervene only when necessary. Remedies must be appropriate to the risk and costs identified and minimized;

Accountability - Regulators must be able to justify decisions and be subject to public scrutiny;

Consistency - Government rules and standards must be united and fairly implemented while maintaining the stability of regulation over the years;

Transparency - Regulators need to provide clear, consistent, comparable and accessible information, publicize regulatory proposals, impacts and contributions received to all who wish;

Objective (focus) - Regulation should focus on the problem and minimize side effects.

Considering the above principles, BRTF started to propose public hearings, resulting in a significant improvement in the quality of regulation.

As a result of the results obtained, in 2006 the Law on Legislative and Regulatory Reform was approved, establishing statutory principles of good regulation based on the work of the task force.

BRTF was replaced in 2008 by a permanent department called Better Regulation. This division comprises the Department for Business, Energy and Industrial Strategy (British Department for Business, Energy and Industrial Strategy). Better Regulation aims to improve accountability to society, in addition to providing transparency to the regulatory process. A report is issued annually with the public hearings, their results and the savings or efficiency generated for the various sectors of activity, including the electricity sector (United Kingdom Government, 2020).

In Great Britain, the Office of Gas and Electricity Markets (OFGEM), the government's regulatory body for the electricity and natural gas markets, was created. It was formed by the union of the Office of Electricity Regulation (OFFER) and the Office of Gas Supply (OFGAS).

From its creation in 1998 to 2019, OFGEM carried out 2,405 public consultations, and as one of the principles of transparency established by the BRTF, in OFGEM's annual reports there is a description of the financial impacts of the consultations on the British economy (OFGEM, 2020).

OFGEM also proposes regulatory measures for the energy and gas market, and an example is the "RIIO²" policy. The objective, with its implementation, is to limit the maximum amount that can be charged as a tariff by the user of the electricity and gas distribution system. The first phase of the implementation of the "RIIO-1" price policy will be completed in 2021, for this reason OFGEM plans its continuity with the "RIIO-2" for the following year.

For this, the PH was proposed with the objective of collecting the greatest amount of information from the users of the distribution network and thus individually defining the pricing policies in the distribution system tariff with the local concessionaires (OFGEM, 2020).

² It is a program used by the regulator with the objective of ensuring that companies provide a safe and reliable service, at a fair value, maximize performance, operate efficiently, innovate and guarantee the operation of their service networks for current and future customers.

5.3 PUBLIC HEARINGS IN BRAZIL

In Brazil, Public Hearings emerged in 1986 through the National Council for the Environment (CONAMA), which allows the use of a public hearing to discuss the Environmental Impact Report (RIMA) and to provide information on the report and on the environmental impact (Silva, Santos, & Paulino, 2003).

In 1987, the Bylaws of the National Constituent Assembly provided, in its art. 14, the holding of a public hearing in the thematic subcommittees, with the objective of hearing "entities representing segments of society". In this case, these audiences are merely informative (Silva, Santos, & Paulino, 2003).

Other laws during the 1990s and early 2000s also contained in their regulations the possibility of holding a public hearing to discuss issues involving the common good.

The figure of audiences gained greater evidence in the second half of the nineties after the privatization process developed in that decade.

With the privatization process, the role of regulatory agencies gained relevance, contributing to the growth of public hearings and consultations as a way to involve society in the preparation of the regulatory legal system.

It was at that time the beginning of the creation of several federal regulatory agencies, inaugurated by ANEEL.

In 1999, a law was published that regulates the administrative process in the scope of the Federal Public Administration, providing for the figure of the public hearing in the Brazilian administrative process (Soares, 2002), thus enabling regulatory agencies to use this tool in order to get closer of society and develop the themes necessary for the improvement of regulation.

The last major change in the legal system took place in 2019, in which Law No. 13,848 brought, among other advances, the obligation of the Regulator to prepare the Regulatory Impact Analysis (RIA), in addition to the preparation of a document describing the regulatory impacts of contributions received by the participants.

5.4 ASSOCIATIONS EXPERIENCE REGULATORY AND PHs - THE CASE OF ABAR AND NARUC PUBLIC HEARINGS IN BRAZIL

The Brazilian Association of Regulatory Agencies (ABAR) was founded on April 8, 1999. It is an entity governed by private law, created in the form of a non-profit, non-partisan civil association. Its objective is to promote mutual collaboration between associates and public authorities, in the pursuit of improving regulation

and technical capacity, contributing to the advancement and consolidation of regulatory activity throughout Brazil. It brings together a large number of Regulatory Agencies in the three spheres, federal, state and (ABAR, 2020).

The total number of ABAR members is 59 considering federal, state, municipal and inter-municipal regulatory agencies (ABAR, 2020). Making a comparison with NARUC in which there are representatives in the entity from all 50 American states in addition to the District of Columbia, Puerto Rico and the Virgin Islands (NARUC, 2020).

The conceptual difference between ABAR and NARUC lies in the fact that the former is an association of regulatory agencies. The second is an entity that has representatives of regulators from various areas of regulation in the US.

This difference in the methodology of participation increases representation, and the decisions taken by NARUC are respected and often accepted by its more than 50 members.

NARUC has services such as advocacy, educational, communication, research and international programs (NARUC, 2020). ABAR, on the other hand, offers an agenda of regulatory discussions and its consequences with the parliamentary chambers, mediation of solutions, courses and training, in addition to various initiatives in the area of basic sanitation, whose initial objective is improve regulatory instruments related to urban solid waste in the country (ABAR, 2020).

VI. PHs IN THE BRAZILIAN ELECTRIC SECTOR - QUANTITATIVE AND QUALITATIVE ANALYSIS

The work carried out a quantitative and qualitative analysis of the PAs carried out by ANEEL in the ten years between 2010 and 2019.

ANEEL, since its creation, has as a principle the transparency in decision-making with the objective of improving SEB policies. The participation of society, with the objective of improving the regulation of the sector and the inspection of the activities carried out by the Agency, shows the commitment assumed by ANEEL with the best practices when communicating with society (ANEEL, 2020).

During the past decade, ANEEL carried out, in absolute numbers, a total of 1,077 PHs. The distribution over the years is detailed in Table 1.

Table 1 - Total PHs carried out by ANEEL between 2010 to 2019

Year	Total
2010	144
2011	90
2012	124
2013	149
2014	93
2015	96
2016	111
2017	99
2018	84
2019	87
Total	1.077

In Table 2, the work considered only the PHs promoted by ANEEL during the period from 2010 to 2019. Performing a percentage distribution during the aforementioned period, it is possible to identify which were the years with the highest volume of Public Hearings.

Table 2 - Distributions of PHs by percentage

Year	%
2010	13,37
2011	8,36
2012	11,51
2013	13,83
2014	8,64
2015	8,91
2016	10,31
2017	9,19
2018	7,80
2019	8,08
Total	100

Fig. 3, in turn, shows the percentage distribution of PHs carried out in the last decade.

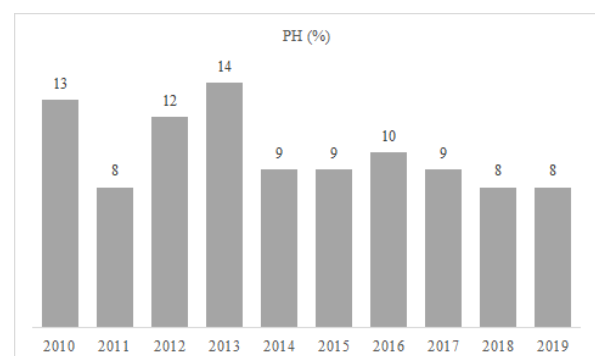


Fig. 3 - Percentage distribution of PHs

In the years 2010, 2012 and 2013, there was a greater number of PHs due to the need to establish or revise the values of Equivalent Outage Duration per Consumer Unit (DEC) and Equivalent Outage Frequency per Consumer Unit (FEC) of the distributors, in addition to a tariff review for both distributors and energy cooperatives. For each of them, an independent AP was opened.

5.5 ENTITIES THAT CONTRIBUTE TO PHs

For this work, a standardization of the typology of entities or representative groups that contribute to PAs was carried out. The following are qualified as:

Distributor: Concessionaire of public service for the distribution of electric energy, and company designated to provide the public service for the distribution of electric energy;

Association: Non-profit organization characterized by the union of individuals or legal entities with the objective of achieving mutual benefits and development for the segment they represent;

Power Generator: Holder of concession for electricity generation;

Transmitter: Concessionaire of public electricity transmission service or equivalent to public transmission service concessionaire;

Energy Trader: Entrepreneur that sells electricity without necessarily owning it;

Consulting: specialized companies or professionals capable of diagnosing or formulating solutions on a subject or specialty for the business environment;

Private company: Consumers who use electricity for their activities;

Individuals: individual representatives interested in the topic - citizens;

Government: Governing authority of a nation or political unit, whose purpose is to regulate and organize society. It covers the federal, state, district and municipal spheres;

A research challenge, during the survey of information, was how to differentiate the classification of generator and private company since there are public and private generators working in the SEB.

As a solution, the work considered any private or public company that produces energy as a generator, leaving companies that do not generate energy within the concept of private companies.

Technically, contributing to PAs would be the opportunity that Brazilian society has to improve the regulatory framework. However, this scenario is not

exactly what happens in practice. Participation in PAs, except for those that have a strong popular appeal, are restricted to groups directly impacted by the suggestion of change and/or that defend their own interests, such as associations.

Table 3 shows the percentage of participation of the groups defined above, making it possible to analyze the participation of each one in the SEB PHs.

Table 3 - Percentage of participation of society in PHs

Entity Type	Total (%)
Distributor	34,21
Association	30,19
Power Generator	14,95
Private company	11,29
Individuals	2,77
Transmitter	2,49
Federal Government	1,41
Consultancy	1,00
Energy Trader	0,76
Government State	0,55
Government Municipal	0,33
Regulatory Agency State	0,05
Total	100

Fig.4 shows the percentage distribution of contributions made by PHs.

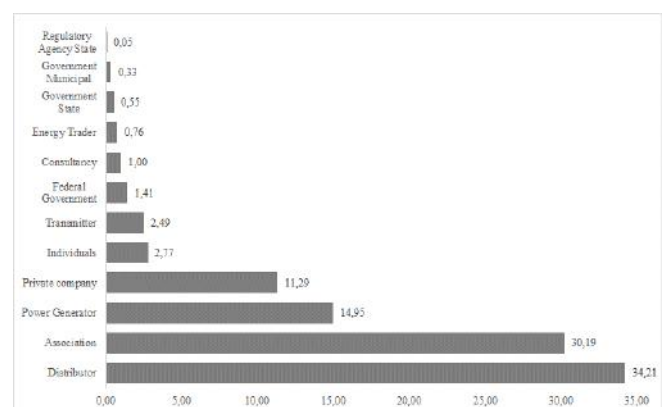


Fig. 4 - Distribution of contributions by PH entities

Considering the analysis of the data collected, the distributor is undoubtedly the most present agent and, consequently, the most interested in monitoring and participating in the improvement of regulation. The reason is due to the fact that considering the energy chain as being

generation, transmission, distribution, commercialization and consumption of energy, distribution is where regulation can act more intensely.

The energy tariff also has a strong presence in regulation as a way to protect the end user. Due to the complexity of the definition process, the average citizen hardly understands the calculation methodology and its revisions. It is necessary for the regulatory authority to act in order to guarantee and maintain the economic balance of the concessionaires, in addition to maintaining the constant improvement of the network.

Another point to be highlighted is the need for awareness on the part of the population, since not everyone knows the role of the State as a Regulator and guider of public policies.

In the generation and commercialization segment, regulatory models in Brazil have opted for competition, and thus there are fewer standards under ANEEL's responsibility. The environmental, labor and other standards used as the basis for the installation of the projects end up being more impactful.

For transmission companies, regulation acts to ensure the quality of service and the economic-financial balance of the transmission lines.

In marketing, as discussed above, excessive regulation that could restrict the competitiveness of companies in the sector is less present than in other links in the production chain. The regulation is restricted to authorization to trade energy and operating limits according to the economic capacity of each company. There are also regulations defining entry barriers for free and special consumers.

Consumers act with direct contributions in PHs or through associations. Consultants, individuals and the government in its three spheres of power, participate in PHs with less intensity, acting in a timely manner according to their interests.

In the survey, the percentage of private companies is behind the contributions of distributors, associations and generators. Examples of companies in the segment are: engineering, law firm, construction companies, input suppliers, among others, who also act on a timely basis to improve regulation.

The scenario of low participation by society or participation only by certain groups is also not a Brazilian phenomenon. In the United States, even with the creation of the portal <https://www.regulations.gov> during the Clinton administration in the 1990s, contributions made by society could be sent using not only physical correspondence, but also the digital means of the Internet. epoch as e-mail and online forms (Coglianês, 2006).

Despite the offer of new mechanisms for the participation of the population, the amount of contributions was not enough to change the scenario of low social adhesion when called upon to collaborate in popular participation in the process of regulating the public (Coglianês, 2006).

The participation between two and three percent shows the low participation of individuals in direct participation in the improvement of regulation. Brazilians make little use of this mechanism, leaving other entities the possibility of intervening in the change.

Table 4 shows the amount of contributions made by individuals, the conclusion of low adherence happens when comparing with the total contributions received in each year of the survey.

Occasionally a particular event can lead to more pronounced contributions. In 2013, PH No. 15/2013 proposed improvement of Normative Resolution No. 414/2010 when the distributor carries out a project or work on private property, attracting greater participation. In REN No. 414/2010, in Chapter III, it is stipulated that the distributor must inform the interested party about the list of works and services required and the schedule, with the deadline for the beginning and completion of the works. As this is an issue that impacts the private property of individuals, the number of contributions was higher this year.

Table 4 - Quantity of contributions in PHs made by individuals

Year	Total contributions received	Total contributions to PHs by individuals
2010	2.862	18
2011	5.464	49
2012	4.766	35
2013	3.891	57
2014	6.088	24
2015	7.049	76
2016	4.873	21
2017	5.251	16
2018	3.845	8
2019	5.019	2
Total	49.108	306

VII. APPLICATION OF DESIGN THINKING IN PHs

Tim Brown defined Design Thinking in 2008 as: "a discipline that uses the designer's sensitivity and innovation methods to match people's needs with what is

technically possible and financially viable for the organization and thus create value for the customer” (Brown, 2008).

Vijay Kumar defined that the DT process consists of a continuous loop, the first step being to observe and learn from reality, and then seek to reach a greater understanding through abstractions and identification of conceptual models that allow us to reframe the problem situation of new ones. shapes (Kumar, 2013).

Fig. 5 exemplifies the schematic conceptualization of the process developed by Kumar.

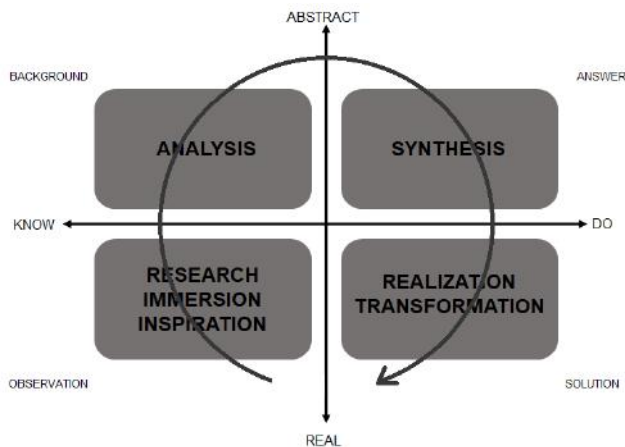


Fig. 5 - Sequence in the elaboration of ideas using DT

Kumar divides the DT process into four logical and sequential steps exemplified in Figure 3, namely:

- 1) Research: process of immersion in reality in search of observations, inspirations and with the help of people involved and the contexts of the problem situation;
- 2) Analysis: activity in which what was collected from the real is abstractly worked, seeking to propose new points of view for the problem situation. These new ways of understanding the problem will give a new direction to the process and structure a new knowledge of the plan for its resolution initially in the field of ideas (abstract);
- 3) Synthesis: step in which, based on the analysis of the previous step, creative approaches are used to generate ideas and new possibilities for solutions, starting the abstract process of doing;
- 4) Realization: possible identified and schematized solutions are transformed into concrete testable experiences for the main problem in addition to solutions for any problems considered secondary raised in conjunction with the discussion of the main theme.

The process of preparing the DT suggested by Kumar, when applied together Public Hearings, would bring as an

innovation a central theme which would be related to other regulatory matters, thus favoring integration.

Fig 6 shows a scheme of how to integrate the DT in the process of elaborating public hearings.

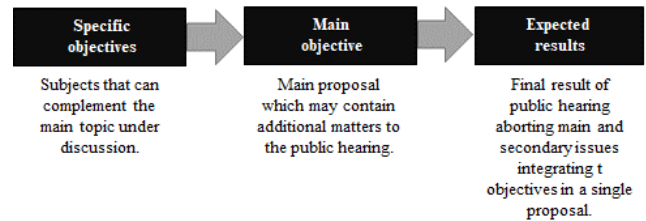


Fig. 6 - How to use the DT concepts in the preparation of proposals for Public Hearings

The initial proposal which has the main objective is defined by the Regulator and placed in a public hearing, it is at this time, as indicated in Fig.1, the definition of the strategy for discussing the ideas.

Afterwards, interested in contributing to the Public Hearing, they would form discussion groups and using the flow elaborated by Kumar and shown in Fig.5, which themes related to PA would be considered as the main objective, which would be specific objectives and the expectation of results.

Once the classification is defined, the Regulator starts receiving contributions from interested parties.

The penultimate step is the compilation by the Regulator, which must prepare a final report analyzing the contributions, justifying whether each one was accepted or not, and another with the regulatory impacts.

Finally, the final step is the elaboration of regulatory improvements based on the expected results on the main topic and on the topics considered specific.

The adoption of the DT as a mechanism can reduce the amount of PA proposed by the Regulator, as in the process, a Public Hearing has unfolding in several sectors through specific objectives.

The concept of “advocacy” can be part of the DT's methodology as the improvement in regulation is discussed in an interdisciplinary way and integrates all representatives of electrical sector segments (generation, distribution, commercialization and consumption).

The problem of low adherence by individuals, as already mentioned, lies in the complexity and understanding of regulation by civil society, but advertising together with a simple, structured, and multidisciplinary methodology allows people to start becoming familiar and start contributing to the PHs.

Along with applying the DT, a planning methodology used by the Office of Gas and Electricity Markets (OFGEM), a UK regulatory agency, displays the status of Public Hearings.

Among the available statuses there are: “Soon”, “Open”, “Closed (awaiting decision)” and “Closed (with decision)”. Statuses help to signal the planning of a given contribution, in addition to demonstrating that if the decision has not yet been published, there is a pending issue on the part of OFGEM.

In Brazil, there is no planning similar to that of OFGEM, and the addition of PHs that will still start the contribution period would be a point of improvement in the process, in addition to the inclusion of their status, especially after the end of the period for receiving contributions.

Regarding the experiences of applying the DT in other countries, there are still few, due to the pioneering spirit and unification of public policies with the DT.

Australia and New Zealand conducted a study of how Design Thinking is integrated into improving public policy. The conclusion was that there is still little evidence that the DT has in its methods and analysis the possibility of application in any sector of public policy. During the first, second and third phases (research, analysis and synthesis) the participation of citizens to understand the problems with the government is of great importance, with Public Consultation being used more frequently (Lewis, McGann, & Blomkamp, 2019).

On the other hand, a final realization that depends on the government does not always find synergy with the government's interests, forcing a change in the concept of public administration to take advantage of the results of the DT. A longer-term study is needed before conclusions about Design Thinking and its impact on policy-making become more evident, but there is a bright future (Lewis, McGann, & Blomkamp, 2019).

In 2016, in Estonia, a study on changes in the process of providing services and benefits to citizens was carried out using the main tools of the DT, in conjunction with popular participation. The result was the creation of a conceptual model for granting benefits that allowed its use by both the public sector and the private sector, stipulating deadlines, skills and improvements (Sirendi & Taveter, 2016).

For these authors, the process of granting benefits has become a product to be offered to the population, with all those involved, public and private agents, performing their functions defined in the conceptual model for efficient care at a low cost to the participants. Also, as a conclusion, the

study highlights the importance of future research to define DT as an integrated solution for continuous improvement (Sirendi & Taveter, 2016).

VIII. CONCLUSION

Even with few studies integrating the DT to the public sector and more effectively to the SEB, the example mentioned indicates that the interaction in the DT methodology together with the performance of PHs can create an environment in which regulation is improved more effectively, creating the opportunity for creative solutions to emerge that might otherwise not be considered.

The DT utilization process applied to Brazilian regulation can be expanded and used in any nation. The objective of the work was to suggest a methodology for universal integration so that it can contribute to the evolution of regulation through the participation of the population in the themes that the government wishes to discuss.

REFERENCES

- [1] ABAR. (2020). Acesso em 01 de 08 de 2020, disponível em Associação Brasileira de Agências Reguladoras: <http://abar.org.br/quem-somos/>
- [2] ANEEL. (2020). Acesso em 17 de 07 de 2020, disponível em Agência Nacional de Energia Elétrica: <https://www.aneel.gov.br/audiencias-publicas>
- [3] BLACK, L. W. (2009). Stories of North Omaha: Conveying Identities, Values, and Actions through Storytelling in a Public Meeting. *The International Journal of Public Participation*, 3.
- [4] Brown, T. (06 de 2008). Design thinking. *Harvard Business Review*, 86(6), 85-92.
- [5] Coglianês, C. (03 de 2006). Citizen Participation in Rulemaking: Past, Present, and Future. *Duke Law Journal*, 55(5), 944-968.
- [6] *Deregulation 1948-2006*. (2020). Acesso em 28 de 07 de 2020, disponível em [regulation.org.uk: https://www.regulation.org.uk/deregulation-1948_to_2006.html](https://www.regulation.org.uk/deregulation-1948_to_2006.html)
- [7] Holliday, D. (2018). *The Profound History of Public Hearings and Why We're Devoted to Documenting Them*. Acesso em 17 de 07 de 2020, disponível em City Bureau: <https://medium.com/city-bureau/the-profound-history-of-public-hearings-and-why-were-devoted-to-documenting-them-bf6f2ba3d5ef>
- [8] Kemp, R. (1988). *Planning, Public Hearings, and the Politics of Discourse* (1 ed., Vol. 1). (J. Forester, Ed.) Massachusetts: The MIT Press.
- [9] Kumar, V. (2013). *101 design methods: a structured approach for driving innovation in your organization*. John Wiley & Sons: Hoboken.

- [10] Lewis, J., McGann, M., & Blomkamp, E. (08 de 2019). When design meets power: Design thinking, public sector innovation and the politics of policymaking. *Policy & Politic*, 48, 111-130.
- [11] Mater, J. (1984). *Public Hearings Procedures and Strategies* (1ª ed., Vol. I). New Jersey: Prentice-Hall.
- [12] NARUC. (2020). Acesso em 10 de 08 de 2020, disponível em National Association of Regulatory Utility Commissioners: <https://www.naruc.org/about-naruc/about-naruc/>
- [13] National Democratic Institute for International Affairs. (2000). *The Role and Practice of Legislative Hearings in Democracies: Examples from Germany and the United States*. Shanghai, Beijing.
- [14] OFGEM. (2020). *OFGEM*. Acesso em 6 de 08 de 2020, disponível em Office of Gas and Electricity Markets: <https://www.ofgem.gov.uk/consultations>
- [15] Piesanti, C. (2014). *As Audiências Públicas no Processo Legislativo: A participação Popular na Câmara de Vereadores de Ijuí - RS*. Universidade Federal de Santa Maria, Santa Maria.
- [16] Poddar, A. (2017). Public hearing and environmental protection. *International Journal of Law*, 63-69.
- [17] RAP . (2011). *Regulatory Assistance Project*. Acesso em 18 de 07 de 2020, disponível em <https://www.raponline.org/>: <https://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-electricityregulationintheus-guide-2011-03.pdf>
- [18] Sabatier, P. (1988). *An advocacy coalition framework for policy change and the role of policy-oriented learning therein*. *Policy Sciences* (Vol. 21).
- [19] Silva, A. R. (05 de 2019). Os desafios na comunicação sobre atributos ambientais e econômicos de projetos. *Conferência Ibero-Brasileira de Energia*, pp. 50-74.
- [20] Silva, L. S., Santos, M. G., & Paulino, V. J. (Jan/mar de 2003). Audiências públicas: histórico, conceito, características e estudo de caso. *Revista de Direito Administrativo & Constitucional*, pp. 237-257.
- [21] Sirendi, R., & Taveter, K. (2016). Bringing Service Design Thinking into the Public Sector to Create Proactive and User-Friendly Public Services. *Tallinn University of Technology*, pp. 221-230.
- [22] United Kindon Government. (2020). *Better Regulation Government's annual report, 2018-19*. United Kindon.