

## **Water Resource Management Sharing On Social Media: The Case Of The Pcj Basin Agency On Facebook**

Juliana De Oliveira Vicentini<sup>1</sup>, Odaléia Telles Marcondes Machado Queiroz<sup>2</sup>

<sup>1</sup>(Department Of Economics, Administration And Sociology, Higher School Of Agriculture "Luiz De Queiroz"/  
University Of Sao Paulo, Brazil)

<sup>2</sup>(Department Of Economics, Administration And Sociology, Higher School Of Agriculture "Luiz De Queiroz"/  
University Of Sao Paulo, Brazil)

---

### **Abstract:**

**Background:** Communication is put into practice according to the context in which it is inserted. Facebook is used as a strategic communication tool in a networked society marked by social media and digital networks. The main reason for the use of social media is its low cost, the ability to segment the audience, interact with the target public, personalize content, establish networking, disseminate information and events, promote services and products, and strengthen a particular brand. In Brazil, the PCJ Basin Agency (Piracicaba, Capivari and Jundiaí) is a reference and pioneer in water resources management and has a fanpage on Facebook - unlike the other River Basin Agencies in the state of Sao Paulo/Brazil, which do not use this social network. Sharing information is one of the elements of efficient water resources management. The aim of this article is to analyze the PCJ Basin Agency's posts on its Facebook fan page during 2023, to understand the communication mechanisms used to share information about water resource management.

**Materials and Methods:** The methodology used is based on content analysis and the categories investigated are frequency of publications, framing, format and engagement.

**Results:** In 2023, 130 content were published on Facebook. The posts are related to 15 themes, the most recurrent of which are events and management activities. Posts about financial resources, the relevance of water resource management and its benefits, and ongoing actions and projects could have been covered more frequently. Posts use a variety of resources such as text, images, links, hashtags and videos. Engagement (comments and shares) is regular.

**Conclusion:** Broadening the thematic scope of posts could be a strategy to further strengthen the role of the PCJ Basin Agency in water resource management in Brazil and to get closer to its users.

**Key Word:** PCJ Basin Agency, communication, Facebook, water resources

---

Date of Submission: 09-03-2024

Date of Acceptance: 19-03-2024

---

### **I. Introduction**

Communication is clearly understood as a "basic social process and phenomenon, not just as the transmission of information" (Kunsch, 2018, p. 14). According to Kunsch (2018), communication in its various forms, the traditional mass media and social media, together exert great power in the most diverse contexts, such as social, political, economic and environmental.

Communication is used depending on the context in which it is inserted. It varies according to the "structure, culture, organization and communication technology" in force (Castells, 2009, p. 24). Nowadays it is part of the network society, which is "a social structure built around digital communication networks" (Castells, 2009, p. 25).

In Brazil, 84% of households have access to the Internet and the number of users exceeds 156 million (Centro Regional de Estudos para o Desenvolvimento da Sociedade da Informação - CETIC, 2023). The country has the third largest number of consumers of social networks in the world and ranks first in Latin America (Forbes, 2023).

Although Facebook was created in 2004, it began arriving in Brazil in 2008, when it had already been consolidated in other countries. Facebook is currently the second most used social network in Brazil, behind Instagram. There are 169 million active Brazilian Facebook users (Data Report, 2023).

Facebook, which emerged with the slogan "Be Connected. Be Discovered. Be on Facebook", aims to connect people and share information and experiences (Meta, 2024). Facebook belongs to Meta Platforms, a

North American digital media and technology conglomerate (Meta, 2024). Facebook is the first social network to reach a global scale with more than three billion monthly active users (Statista, 2024).

Several organizations have started to use Facebook as a strategic communication tool. This is due to the recognition of the possibilities that the virtual environment offers. In this context, the internet goes beyond its technological nature and assumes a central position in relation to other spheres of communication, influencing and creating forms of interaction, sociability and participation (Luvizotto; Magalhães, 2023).

Facebook is an advantageous social network for organizations. However, its low cost makes it possible to segment the audience, interact with the target public, personalize content and democratize information (Machado Neto, 2011). Facebook is also useful for networking, finding business opportunities and partnerships, organizing and publicizing events, exchanging information, promoting products and services, visibility and brand strengthening (Safko; Brake, 2010).

One of the Brazilian organizations that extensively uses Facebook is the Piracicaba, Capivari and Jundiaí Basin Agency (PCJ). It is the forerunner in water resources management in the country (Oliveira; Figueiredo, 2009), was the first Basin Agency to join the United Nations (UN) Global Compact and is part of the Ministry of the Environment's A3P Program for sustainable actions (Agência das Bacias PCJ, 2021).

The Piracicaba, Jundiaí and Capivari Basin Agency (PCJ-AB) was created in 2009 and is an executive branch of the Piracicaba, Capivari and Jundiaí River Basin Committee (created in 1991, it is a collegiate body that manages water resources in a participatory, decentralized and integrated manner (Comitê de Bacias Hidrográficas-PCJ, 2022)) and is part of the Integrated Water Resources Management System (SIGRHSP, 2023). The AB-PCJ is responsible for creating water resource management instruments and managing the funds collected from charging for water use (at federal and state levels) and from financial compensation for hydroelectric plants (Agência das Bacias PCJ, 2019).

PCJ AB's mission is to "carry out actions to implement the water resources policies of the PCJ Committees by providing technical and administrative support and financial management" in the geographical area comprising the basins of the Piracicaba, Capivari and Jundiaí rivers, located in the states of Sao Paulo and Minas Gerais/Brazil (Agência das Bacias PCJ, 2019).

Information sharing is an essential strategy for efficient water resources management. In this regard, the Organization for Economic Cooperation and Development recommends that institutions in this segment dedicate themselves to "producing, updating and sharing in a timely manner consistent, comparable and politically relevant data and information for and related to water policies, and using it to guide, evaluate and improve those policies" (OECD, 2015, p. 10). In this context, we consider Facebook to be a useful tool for achieving this goal.

This paper's general objective is to analyze the PCJ Basin Agency's posts hosted on its Facebook fanpage during the year 2023, to understand the communication mechanisms used to share information about resource management.

## **II. Material And Methods**

When creating a fanpage on Facebook, the organization can share a wide range of content of interest to the community that is also present on the social network. At first, the idea was to compare the fan pages of the three basin agencies in the state of São Paulo/Brazil, namely: Piracicaba, Capivari and Jundiaí River Basin Agency, Alto Tietê River Basin Agency Foundation and Sorocaba and Médio Tietê River Basin Agency Foundation. However, the latter two do not have their own Facebook page, i.e. they are linked to their respective Basin Committees. In this context, the object of analysis for this research is the posts on the PCJ Basin Agency Facebook page, from January to December 2023.

Based on the assumptions of Bardin (2016) and Sampaio and Lycarião (2021). Content analysis encompasses "systematic, intersubjectively validated and public procedures to create valid inferences about certain verbal, visual or written content, seeking to describe, quantify or interpret a certain phenomenon" (Sampaio; Lycarião, 2021, p. 17).

For Bardin (2016), analysis should be organized into three stages: (a) pre-analysis which consists of selecting the corpus and defining the indicators; (b) coding the material which involves processing the raw data which is aggregated into units of analysis, allowing the characteristics of the selected content to be described; (c) processing the results which includes quantifying the phenomena using graphs and tables to generate inferences about the corpus analysed.

The data collection was conducted on the PCJ Basin Agency's Facebook page on two fronts, with an interest in posts (publications written by the user (AB-PCJ) that appear on their own timeline and on the timelines of other users who like the page). The posts were collected by monitoring the Facebook page daily during the year 2023. The information on the posts was organized in an Excel spreadsheet. The analysis indicators selected were: date of publication; engagement - reactions generated by users in the form of likes, shares and comments; resources used - text, image, link, video and hashtag (a marker that starts with the # sign,

used as a kind of label that highlights, contextualizes the content/context and allows it to be searched for and located), and themes. The content data was processed quantitatively and grouped into 15 categories that emerged from the corpus itself. The inferences were organized in graphs and described verbatim.

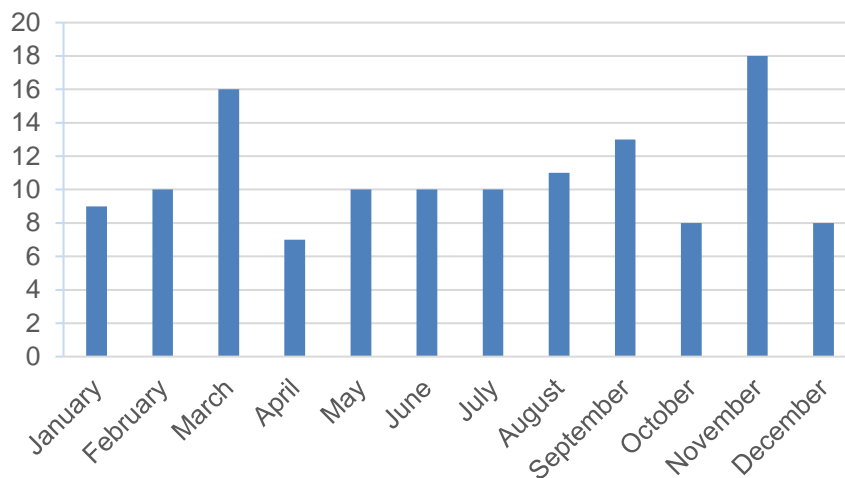
**III. Result And Discussion**

The presentation of the results is organized into four dimensions: (1) frequency of publications; (2) framing; (3) format; (4) engagement.

**Frequency**

In this category, we analyzed the frequency of posts published by the PCJ Basin Agency. From January to December 2023, there were 130 publications (Figure 1), which corresponds to an average of approximately one post every three days.

**Figure 1 - Frequency of posts.**



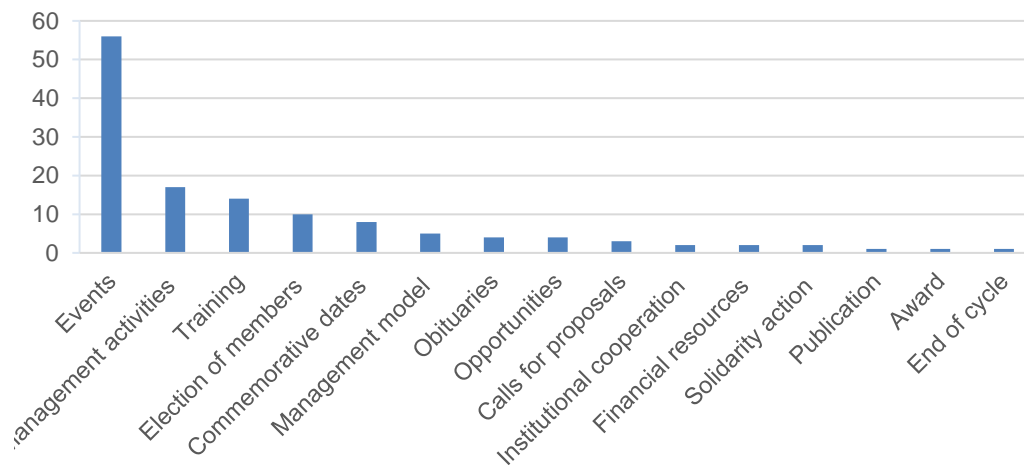
Source: Authors (2024).

The months with the fewest publications were April, October and December. The months of most intense activity were March, September and November.

**Framing**

This topic is about the themes of the posts, which were grouped into 15 categories that were created from the corpus itself (Figure 2). Those with the largest number of posts are events, training, projects and programs, and elections for members. Each of the categories is described below.

**Figure 2 - Framing of posts.**



Source: Authors (2024).

Events - corresponds to posts about the participation of some member of the PCJ Basin Agency in meetings, congresses, workshops, etc., and the dissemination or invitation (13 occurrences) for the community to participate in events organized by the Agency or at which it would be present.

Management activities - includes posts publicizing projects, programs and actions carried out by the PCJ Basin Agency, such as the Cantareira Project, PCJ Virtual, the Mirim Committee, the M.A.R.U. Project, Payment for Environmental Services, the Hydrological Monitoring Network, sewage treatment (desilting and logo drying), reforestation to protect springs, sanitation and the Watershed Pollution Control Program.

Training - refers to publications that publicize courses open to the community interested in water resource management (ten occurrences), training for employees of the PCJ Basin Agency (two occurrences) and training aimed at municipal managers (two occurrences).

Election of members - this category includes posts about deadlines, candidacies, elected members and new mandates for the PCJ Committee.

Commemorative dates - these are posts that celebrate some special date related to water resources topics, such as World Water Day, Piracicaba River Day, Jundiá River Day, Capivari River Day, Environment Month, celebrations for the existence of the PCJ Committee and the PCJ Basin Agency.

Management model - posts announcing the reception of national and international managers and undergraduates at the PCJ Basin Agency who are interested in learning about the organization's water resources management model.

Obituaries - posts dedicated to paying tribute to people who have died and who have contributed to water resources management.

Opportunities - posts advertising internship vacancies at the PCJ Basin Agency.

Calls for proposals - publications consisting of calls for proposals or projects related to Payment for Environmental Services, Comprehensive Ownership Projects and sewage treatment works.

Institutional cooperation - posts about the PCJ Basin Agency's partnerships with institutions to promote water resource management, such as SABESB (São Paulo State Basic Sanitation Company) and the São Paulo State Undersecretary for Water Resources and Basic Sanitation.

Financial resources - publications dealing with the deliberation of resources or approval of accountability for the amount used.

Solidarity action - posts publicizing the voluntary action organized by the PCJ Basin Agency to collect drinking water and hygiene items to help families affected by the floods in São Sebastião, on the coast of the state of São Paulo.

Publication - dissemination of a publication that took place in March (the month of Women's Day) in which the book "Women for Water 2" was promoted. The aim of the book is to pay tribute to women who contribute or have contributed to the management of water resources.

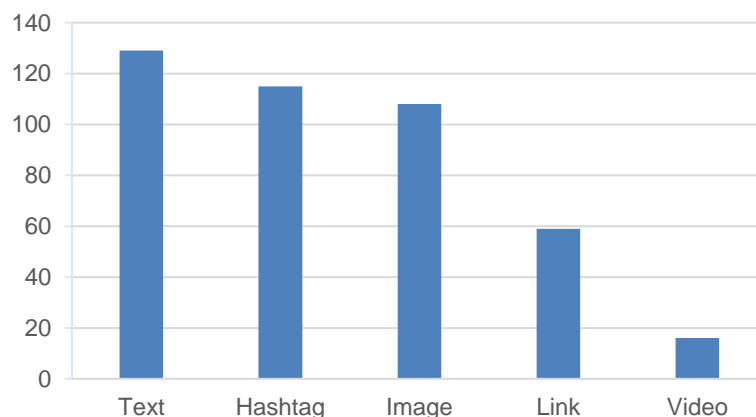
Award - post announcing the Chico Mendes Prize for Ecology and the Environment, awarded to the PCJ Basin Agency in recognition of its contribution to sustainable development.

End of cycle - the last publication of December 2023, consisting of an end-of-year message and a promise to continue the work of water resources management in 2024.

### **Format**

Among the 130 posts on Facebook, 129 are composed of text, 115 have a hashtag, 108 have an image, 59 are accompanied by a link and 16 have a video (Figure 3).

**Figure 3 – Resources used in posts.**



Source: Authors (2024).

It is important to note that most posts feature more than one resource simultaneously. Text, hashtag and image are the most used. Hashtags - markers capable of linking a word in the digital environment to a specific message - appear more than images. Hashtags have various uses, such as language vices, message contextualization, emphasizing the subject, expressing emotions, denying information, supporting movements and promoting brands (CALEFFI, 2015).

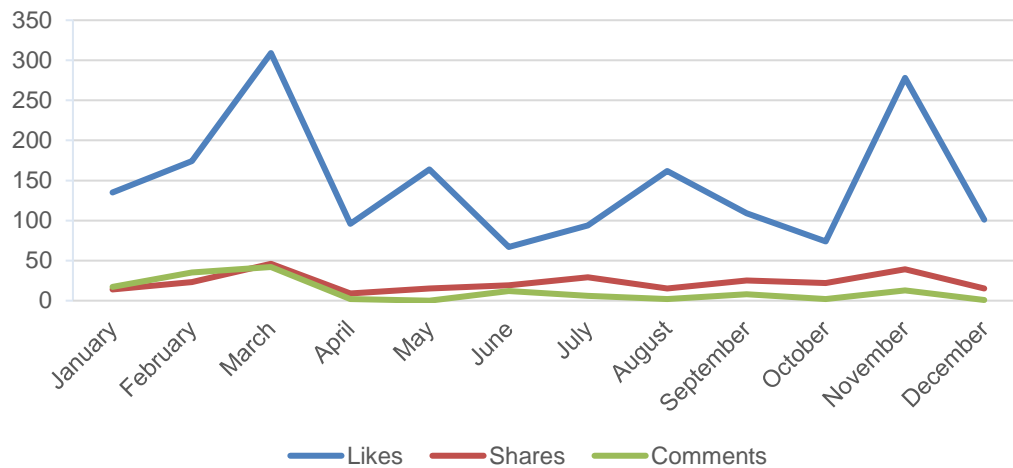
The most used hashtags in the corpus analyzed are #AgenciasBaciasPCJ (103 occurrences), #ComitêsPCJ (100 times), #Sustentabilidade (18 appearances), #ENCOB (13 times), #Recursoshídricos (12 occurrences) and #ConsórcioPCJ (nine times). The two most frequent hashtags and the last one are used as a self-promotion resource, reinforcing the organizational identity to Facebook users and as a marker to redirect content involving both institutions. #Sustainability and #WaterResources were used as a tag to relate the subject of the post to this theme. #ENCOB was inserted in posts to refer to the National Meeting of River Basin Committees - an event attended by the PCJ Basin Agency.

The use of links and videos published on Facebook was not incredibly significant. This last resource was most used to publicize projects and programs of the PCJ Basin Agency, to cover events and elections, and on commemorative dates.

### Engagement

To quantify public participation in the 130 Facebook posts in 2023, we counted the number of likes, comments and shares (Figure 4).

Figure 4 – Monthly engagement with posts in 2023.



Source: Authors (2024).

In 2023, the PCJ Basin Agency Facebook page had a total of 1763 likes, 140 comments and 271 shares of content. The months with the greatest engagement were March (397), November (330), February (232), August (179) and May (179).

One of the posts with the most engagement was dedicated to Water Day, which received 127 likes, 26 shares and 16 comments, using text, video and a hashtag.

### IV. Conclusion

The PCJ Basin Agency is one of the leading São Paulo organizations in this segment on the social network Facebook, which sets it apart from other agencies. This positioning can be understood as a strategy to make itself better known to the society in which it operates, as well as being a way of sharing information that it considers relevant to a wider audience.

The postings on the page analyzed took place throughout 2023 and were made up of text, images, links, videos and hashtags. This continuous periodicity may show that sharing information with the public is a concern for the organization and a way of making itself present on its followers' timelines.

There is variety in the framing of the 130 posts. There are a considerable number of publications in the events category, compared to the others. This concentration can result in a much greater emphasis on publicizing the participation of the PCJ Basin Agency in various events, as well as its role as organizer or publicizer of the events.

As far as events are concerned, it is important that the organization's work is shared, but it is equally important that other themes are given greater prominence on the Facebook page. The dissemination of projects,

programs and actions carried out by the PCJ Basin Agency was the subject of only seventeen posts. Investing in the production of content along these lines could be an opportunity for the organization to publicize its ongoing activities.

The collection of public funds and their respective use were also covered modestly in the 2023 posts. It would be more pertinent for this type of information to be disseminated more intensively so that the population can learn how the economic management of water resources works. Content on this subject could make the Basin Agency more transparent to its users.

The relevance of water resources management and its benefits for the PCJ community could also become the subject of more expressive Facebook posts. Sharing this information can help to engage the population in a more participatory and democratic management of water resources. It is also a way of strengthening the PCJ brand within its sphere of activity. In addition, it would be an opportunity to increase the number of followers and engagement, which could contribute to greater dissemination of content on the social network.

It is important to highlight the limitations of this study. To the detriment of the argument already presented in this article, the Facebook page of the PCJ Basin Agency could not be compared with other Basin Agencies located in the state of São Paulo. The analysis also took place over the course of one year and cannot be generalized to the entire activity of the page, which is online in the run-up to 2023.

Based on the case study of a Basin Agency that is a national reference and given the scarcity of research dedicated to exploring communication in the context of water resource management, we believe that this work can contribute to future reflections on communication, social networks and environmental management.

### **Aknowledgments**

To the USPSusten Program linked to the Superintendence of Environmental Management of the University of São Paulo (USP) for the financial support in conducting the research and to the Interunits Graduate Program in Applied Ecology of USP for the support for publication.

### **References**

- [1]. Agência Das Bacias Pcj. Agência Das Bacias Pcj. Available At: <https://Agencia.Baciaspcj.Org.Br/>. Accessed On: Nov. 22, 2023.
- [2]. Bardin, L. *Análise De Conteúdo*. São Paulo: Edições 70, 2011.
- [3]. Caleffi, P. M. The 'Hashtag': A New Word Or A New Rule? *Journal Of Theoretical Linguistics*. V. 13, N.2, P. 46-69, 2015.
- [4]. Castells, M. *Comunicación Y Poder*. Madrid: Alianza Editorial, 2009.
- [5]. Centro Regional De Estudos Para O Desenvolvimento Da Sociedade Da Informação (Cetic). *Tic Domicílios 2023*. Available At: [https://Cetic.Br/Media/Analises/Tic\\_Domicilios\\_2023\\_Coletiva\\_Imprensa.Pdf](https://Cetic.Br/Media/Analises/Tic_Domicilios_2023_Coletiva_Imprensa.Pdf). Accessed On: Jan. 8, 2024.
- [6]. Datareport. *Digital 2023: Brazil*. Available At: <https://Datareportal.Com/Reports/Digital-2023-Brazil>. Accessed On: Feb. 10, 2024.
- [7]. Forbes. *Brasil É O Terceiro Maior Consumidor De Redes Sociais Em Todo O Mundo*. Available At: <https://Forbes.Com.Br/Forbes-Tech/2023/03/Brasil-E-O-Terceiro-Pais-Que-Mais-Consome-Redes-Sociais-Em-Todo-O-Mundo/>. Accessed On: Jan. 5, 2024.
- [8]. Kunsch, M. M. K. *A Comunicação Estratégica Nas Organizações Contemporâneas*. *Media & Jornalismo*. V. 18, N. 33, P. 13-24, 2018. Available At: <https://Repositorio.Usp.Br/Item/002912450>. Accessed On: Jan. 3, 2024.
- [9]. Luvizotto, C. K.; Magalhães, G. M. *Organizational Communication And Accessibility Resources In The Digital Environment: Impact Of The Covid-19 Pandemic On Burger King Brazil'S Facebook*, *Contratexto*, N. 39, P. 1. 21, 2023. Available At: <https://Revistas.Ulma.Edu.Pe/Index.Php/Contratexto/Article/View/6143/6544>. Accessed On: Jan. 10, 2024.
- [10]. Machado Neto, Ivo Emanuel Campos. *Os Desafios Dos Média Sociais Na Comunicação Organizacional: A Emergência Do Facebook Como Ferramenta De Comunicação*. Available At: <https://Repositorium.Sdum.Uminho.Pt/Bitstream/1822/18101/1/Ivo%20emanuel%20campos%20machado%20neto.Pdf>. Accessed On: Jan. 5, 2024.
- [11]. *Organização Para A Cooperação E Desenvolvimento Econômico (Ocde)*. *Princípios Da Ocde Para A Governança Da Água*. Available At: <https://Www.Oecd.Org/Cfe/Regionaldevelopment/Oecd-Principles-Water-Portuguese.Pdf>. Accessed On: Feb. 20, 2024.
- [12]. Meta. Facebook. Disponível Em: <https://About.Meta.Com/Br/Technologies/Facebook-App/>. Accessed On: Dec. 20, 2023.
- [13]. Oliveira, I.; Figueiredo, P. M. *Aplicação De Ferramenta De Gestão De Projetos No Plano De Bacias Pcj (2008-2020)*. *Ciência E Tecnologia*, V. 16, N. 32, P. 7-17, 2009.
- [14]. Porém, M. E. *Organizações E Cão: Algumas Reflexões*. In: Porém, M. E.; Hidalgo, J.; Yaguache, J. *Inovações Em Relações Públicas E Comunicação Estratégica*. P. 121-133. 2020.
- [15]. Sakfo, L.; Brake, D. K. *A Bíblia Da Mídia Social: Táticas, Ferramentas E Estratégias Para Construir E Transformar Negócios*. Tradução: James Gama. São Paulo: Blucher, 2010.
- [16]. Sampaio, R. C.; Lycarião, D. *Análise De Conteúdo Categorical: Manual De Aplicação*. Brasília: Enap, 2021.
- [17]. *Sistema Integrado De Gestão De Recursos Hídricos – Sigrh*. *Deliberação Crh*, N. 213 De 12 De Junho De 2018. Available At: [https://Sigrh.Sp.Gov.Br/Public/Uploads/Deliberation//Crh/13741/Deliberacao\\_Crh\\_213.Pdf](https://Sigrh.Sp.Gov.Br/Public/Uploads/Deliberation//Crh/13741/Deliberacao_Crh_213.Pdf). Accessed On: Jan. 20, 2023.
- [18]. Statista. Facebook: Statistics And Facts. Available At: <https://Www.Statista.Com/Topics/751/Facebook/#Topicoverview>. Accessed On: Feb. 4, 2024.