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THE COMMODIFICATION OF WATER AND ITS REBATES IN THE BRAZILIAN SEMI-INDUSTRY

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ABSTRACT
Water is a natural and vital resource for all living beings. However, as everything in the capitalist production system is marketable, water is no exception to the rule and becomes inappropriately appropriated and, for the poorer classes, it has restricted use. In Brazil, there are multiple uses and conflicts of water, especially in regions with greater socioeconomic inequalities and climate implications, which reverberate in water scarcity, such as the Brazilian Northeast. In this sense, the present work aims to analyze the uses and conflicts of water in Brazil from the nature-society relationship and the repercussions of the capitalist mode of production through the unequal and market distribution of water, in addition to addressing the issue of water from integrated way, bringing human actions to the debate, as well as observing the correlation of water scarcity in the northeastern sertão region and whether this determines the access to water of the poor populations that live there. From this perspective, the procedures proposed for data collection and obtaining results were through bibliographic research. In the bibliographic research, authors such as: Ribeiro (2008), Júnior and Barros (2020), Machado and Torres (2012), Ferreira (2019), Silva (2016), among others who contributed to the theoretical basis were used.
Keywords: Water. Commodification. Geography

A MERCANTILIZAÇÃO DA ÁGUA E SEUS REBATIMENTOS NO SEMIÁRIDO BRASILEIRO

RESUMO
A água é um bem natural e vital para todos os seres vivos. Não obstante, como tudo no sistema de produção capitalista é mercantilizável, a água não foge à regra e passa a ser apropriada indevidamente e, para as classes mais pobres, ela passa a ter uso restrito. Em regiões onde há escassez de água, ela passa a denotar maior valor econômico, como no semiárido brasileiro, onde existem múltiplos usos, os quais não atendem a todos igualmente. Neste sentido, o presente trabalho tem como objetivo analisar a mercantilização das águas no semiárido brasileiro a partir da relação natureza-sociedade e os rebatimentos do modo de produção capitalista através da distribuição desigual e mercadológica da água, além de abordar o tema das águas de modo integrado, trazendo para o debate as ações humanas, bem como observar a correlação da escassez

hídrica na região do sertão do Nordeste com as desigualdades sociais ali observadas. Nessa perspectiva, os procedimentos propostos para a coleta de dados e obtenção de resultados foram através da pesquisa bibliográfica. Na pesquisa bibliográfica foram utilizados autores como: Ribeiro (2008), Júnior e Barros (2020), Machado e Torres (2012), Ferreira (2019), Silva (2016), dentre outros que contribuíram para o embasamento teórico.
Palavras chaves: Água. Mercantilização. Geografia

INTRODUCTION

Hydrography studies the waters that make up the earth's surface and its distribution. This natural element is indispensable to the maintenance of the life of living beings and therefore even the relations between human beings and it cannot be dissociated.

Much of the water that makes up the earth's surface is located in the oceans, which is not suitable for humans, which is a problem, since the "little" fresh water that is available is considered as a resource, that is, marketed by the hegemonic class and is not distributed equally throughout the globe.

In this sense, Ribeiro (2008) brings primordial discussions in his book "Political geography of water", as well as Machado e Torres (2012) in his book Introduction to hydrogeography, both discussing the political, territorial, spatial, geographical relations of the waters. Thus, it is revealed the strategic character that the different uses and appropriations of water impose on society and the environment.

In areas such as the semi-arid northeast, which suffers from droughts typical of this climatic condition, water, due to its scarcity, becomes a coveted asset, becoming an even greater value. Thus, the socioeconomic appropriation of water reverberates in contradictions in the geographical space, which corroborate the prohibition of poverty-drought association, when in fact what one has is the deprivation of a natural good for dispossessed classes.

Not only holding on to the social sphere, Magalhães Júnior and Barros (2020) bring essential concepts about geogeomorphology, which are fundamental to the understanding about the dynamics and processes that involve water. In addition, they highlight the correlation that exists between the hydrological system and its role in the modeling of the earth's surface, thus being directly related to geomorphology.

In this sense, the present work aims to analyze the commoditization of waters in the Brazilian semi-arid from the nature-society relationship and the rebates of the capitalist mode of production through the unequal and market distribution of water, in addition to addressing the theme of waters in an integrated way, bringing to the debate human actions, as well as observing the correlation of water scarcity in the region of the northeast hinter country with the social inequalities observed therein

Therefore this article is relevant, because it brings an integrated view of nature society in relation to water and the complex chain of social and natural phenomena that orbit around this element of nature, in order to value a critical and reflective look, which does not cease to emphasize the influence of human beings on natural elements, making it clear that the impact of society is differentiated and meets the interests of specific groups.

MATERIAL AND METHOD

To research these analyses, the dialectical method will be used, which "proposed by Hegel and Marx, is precisely an attempt to think about the world integrating the different contradictory spheres of the real" (ZAGO, 2013, p. 111). When analyzing the commoditization of waters in the Brazilian semi-arid, it is perceived that one cannot dissociate the natural and social aspects, dividing them as if they were not parts of a whole.

From this perspective, the procedures proposed for data collection and obtaining results were through bibliographic research. In the bibliographic research, authors such as: Ribeiro (2008), Júnior and Barros (2020), Machado and Torres (2012), Ferreira (2019), Silva (2016) who contributed to the theoretical basis were used.

RESULTS AND DISCUSSIONS

Natural and human processes that influence hydrography

Hydrography is the study of the waters of the earth's surface and stands out as a natural element, a vital source, since without it no living being survives any smallest of its need. In addition, it is found in different states of matter, namely: solid, liquid or gaseous state, being more commonly seen in its liquid aspect.

Most of the planet's water is concentrated in the oceans with a percentage of 97.5%. The remaining 2.5% are freshwater, of which they are mostly frozen in the form of polar ice caps and large blocks of ice emanating in the oceans, which detach from glaciers (icebergs). Groundwater represents another substantial part of fresh water. Finally, the waters that are on the surface are distributed in rivers and freshwater lakes (RIBEIRO, 2008).

The way this water is distributed on the planet is defined by several factors that are related to a greater or lesser degree, such as relief, vegetation, climate, soil type, type of rock, influence of gravity, as well as by human actions, considering that they act actively in nature (TEIXEIRA et al, 2007).

Vegetation directly or indirectly influences water dynamics. When it is removed, it affects evapotranspiration, which alters the dynamic balance of which it is part. Infiltration is also compromised, as the vegetation serves to cushion water droplets, hindering percolation and, consequently, changing the regime of the subsoil Ed.

Another problem related to the removal of the flora is the silting of rivers, which will be saturated by sediments, since the area has become unprotected and susceptible to erosion. With this, the river loses its natural dynamism, which ends up altering the balance of the whole system, being the human being the main actor for this to occur.

The nature of the rock is another factor that contributes to the dynamism of water flows. The more porous the rock, the greater the infiltration capacity, being commonly found in areas of sedimentary formations. On the other hand, when the rock has a high impermeability index, infiltration will be much lower, being found in areas of crystalline formations, such as in the semi-arid region of northeastern Brazil.

Gravity, in turn, acts in an influential manner in the direction of flows, which tend to go from areas of high slope to flat areas. Not by chance the rivers obey the logic of gravity, rising in high points of relief and flowing into more lowered areas. An example of this dynamic is that of the Amazon River, which is born in the Andes Mountains, which is an area of mountainous relief, flowing into a region of plain.

Climate, on the other hand, is an important element in the spatial regime of the waters due to the issue of rainfall. In tropical areas, due to the high rainfall indexes, there is a tendency to the formation of large bodies of water, as in the case of the Amazon River, whose area of coverage is located in a region of equatorial climate. However, in areas of dry climates, such as the semi-arid northeast, rainfall is poorly distributed and scarce, which reverberates in intermittent and ephemeral water bodies in most cases.

Nevertheless, hydrological dynamics directly influence the modeling of terrestrial relief, that is, in the geomorphology of the landscape. Thus, geomorphology is the study of the relief forms of the earth's surface, which is the result of the action of internal and external agents. The actions perpetrated by the flow of water, such as weathering and erosion, constitute external factors of relief modeling (JÚNIOR E BARROS, 2020). In the semiarid regions, the presence of thermoclastia is remarkable, that is, the physical weathering conditioned by the thermal amplitude between day and night.

The sculpture of the relief takes place from the action of external agents, such as: winds, rains, rivers, ice and human participation. Among all these agents, rivers are the main ones that act externally, having strong power of transport and sediment deposition, which highlights the decisive character of the waters in the fondness of the natural environment. In the semi-arid northeast, the main erosive agent is the São Francisco River, the only perennial river found there.

With this, it can be seen that water systems are more complex than most people imagine, depending on numerous factors, which at the end and in the end are part of an integrated whole, without dissociation of the established parts. With the action of human beings these balances can be altered, generating negative rebates both for natural systems and, consequently, for themselves, since they are part of nature.

With regard to the participation of societies, despite the brief appearance of Homo Sapiens on planet Earth, which according to Harari(2020) "emerged in East Africa about 2.5 million years ago", its impacts on the planet have already reached surprising levels. In this sense, water is one of the natural elements that have been strongly impacted by such actions.

In the meantime, water was appropriated by the great hegemonic sectors of society as a resource and not as a natural good indispensable to the life of living beings, which occurs from the emergence of the capitalist mode of production, which, if considered the history of planet Earth, is an ephemeral period. In other words, "human beings" already consider themselves owners of the world and holders of natural resources.

One cannot study the dissociated hydrography of human interest, since in the capitalist mode of production everything becomes marketable, including the waters, there being contradictions, since those who actually appropriate are specific groups that meet the longings of market logic, that is, the hegemonic class.

Thus, the water used as a resource meets the interests of large corporations that degrade the environment in search of profitability. From this, it can be instated that the water crisis is not due to the pure and simple lack of water, because the hydrological cycle permanently recomposes it. In the meantime, according to Silveira (2014, apud LIMA and HANAI, 2017, p.7), "The hydrological cycle, also often called the water cycle, consists of transporting and moving water between environmental compartments, mainly between the earth's surface and the atmosphere."

Add to that, the fact that water is not regularly distributed across the planet. There are areas that account for a large portion of rivers and aquifers, such as the Amazon region in South America and the Congo basin in Africa. Thus, poor distribution provides that in some areas water is an extremely strategic asset and the target of conflicts, such as in the Middle East. According to Ribeiro (2008, p. 19):

> [...] os conflitos têm no Oriente Médio seu ponto de maior tensão, envolvendo Israel, Palestina e Síria em torno do uso das águas do rio Jordão. Na América do Norte existe uma tensão resolvida de outra forma entre o México e seu poderoso vizinho.

Even though some regions have a water surplus, this does not mean that their populations have access to adequate water for use, since there are no investments in basic sanitation and treatment. It is understood that access to water today is more due to its unequal appropriation of capitalist logic than by its physical distribution.

Moreover, the level of water consumption among countries is extremely unequal, and the so-called large consumers and degrading people are developed, especially in the United States, which according to Ribeiro (2008)"[...] gets 46.6% of the water used by OECD countries and 12.5% of the water consumed on Earth." Compared to the African country, Mozambique, the U.S. consumes approximately 34 times more water.

Another point to mention on this issue is that the impact on the final destination of the waters occurs unevenly, because the hegemonic class causes greater damage proportionally in this good and the subservient classes absorb most of the consequences of degradation. Access to water is restricted and when not, mostly poor and black populations consume contaminated water, either by effluents or pesticides. This example constitutes a case of environmental injustice, because weights and measures are differentiated according to social class, in addition to skin color (ACSELRAD et al, 2008).

Thus, the water issue is not as simple as it seems, because the laity believe that water can literally end up, which is not true, but it may be and is already unmade (in some places on the planet) for the most deprived populations, who are forced to ingest poor quality water, with garbage, pesticides, domestic and industrial effluents, which causes diseases that "cause the death of about 30,000 people per day" (PETRELLA, 2004, p.11, apud MACHADO E TORRES, 2012).

LAW OF THE WATERS AND THE IMPLICIT COMMODIFICATION OF THIS GOOD IN THE SEMI-OWN NORTHEAST

Water is treated in Brazilian legislation as a good of all, but there are countless devices to hide its mercantilization and its unequal access, with the poorest population being at the mercy of capitalist domination imposed on the means of reproduction of life. Thus, Ribeiro (2008, p. 117) explains that the National Water Policy is instituted by Law9.433/1997and states that:

> Item "c" in paragraph 12 deals with access to water. He states that everyone, regardless of nationality, religious belief, gender, being imprisoned or political refugee, who is under the jurisdiction of a member state, should have access to water and the facilities it can bring.

Water is also "protected" by legislation regarding the quality and quantity of this good, but the reality is totally different, given that central countries consume and degrade it in an exacerbated manner, as well as the rich minorities of peripheral countries, such as Brazil, stressing that the blame is often attributed to the subservient class, which, despite the quantity, generate a minimal impact compared to the richest on the planet. In this sense, water, despite the support of the law, is treated as an economic resource rather than an inalienable asset to the survival not only of human but also of all living beings. Thus, Borba and Mercante (2001, apud ZAGO, 2007, p.28) exemplify that:

> One of the resources that have received the greatest impact is water. The pressures on water resources are directly related to the economic development model, which is expressed by the level of consumption of society and by the regional predominance of different economic activities. As raw water becomes a water resource, due to the demand for anthropic activities, the conflict around its appropriation and use also grows, acquiring value because it becomes an economic asset.

Therefore, it is noted the need to rethink the management of water resources in order to deal with this issue in a more rigid and fair way. With this, the watershed is the elementary level of water resource management in Brazil, which involves different levels of social action, which are: water users, political leaders, non-governmental organizations, as well as cooperation between water users (general community, companies, industries) and public and private power, which is linked to the decentralized management of the hydrographic basin. Thus, Taveira (2018, p. 131) points out that:

> The Water Law of 1997 (Law no. 9,433/1997) states that any user who uses water for his economic activity, either by capturing water for industry activities, irrigation, desntureing of animals, or by the release of domestic or industrial effluents, causing some qualitative or quantitative impact on water resources, must obtain authorization for this through the granting of the right to use water. In addition to the grant, the user may have to pay for this use. The collection of water use is not a fine and should also not be confused with tariff paid to sanitation companies in cities (the water bill). The collection of water use is a remuneration that occurs for the use of a natural good, public domain and the right of all. It should be charged to those who use water directly from

> rivers and other bodies of water. In short, those who use and pollute more should pay more, and those who use less and pollute less, should pay less.

However, as the water conflicts scattered around the world well attest, and Brazil does not escape the rule, this access occurs in an unequal way, causing there to be contradiction within the legislation itself, because there is an unbalance of weights and measures, in which the poor often do not have access to water and is blamed for the water crisis caused more incisively by the holders of capital.

Thus, it is perceived that the real culprits for the impacts caused to water in Brazil are precisely the agricultural and industrial sector, which do not follow the norms of the Water Law of 1997 (Law no. 9,433/1997), precisely because they are strong in decision-making, ignoring such actions. Thus, these economic sectors use water in an exacerbated way, returning to partially polluted nature, without any treatment and with effluent disposal sparse in the canals, with harmful chemical elements that will be used by the subservient class. Thus, Barbosa et al (2019, p. 14) exemplify that:

> The release of effluents is another environmental impact that generates conflicts in the BHs. In addition to the reduced supply of water, society still is ore not adequately treated with the proper treatment of industrial and domestic sewage generated by government institutional actors such as Petrobras and non-governmental institutions, such as the Association of Residents who have a National Registry of Legal Entities (CNPJ); and with the ineffective supervision of institutional actors (IBAMA and ADEMA).

Nevertheless, aquifers are considered underground reserves and are being targeted by economic appropriation to develop agribusiness-related activities. This time, many believe that the intensive use of pesticides in the soil does not have any impact on groundwater, but it is insating that this is possible and Ribeiro et.al (2007, p. 3) corroborate so that:

> Soil cultivation and management have a great influence on groundwater quality and recharge rates of some aquifers. Some agricultural practices are capable of causing diffuse contamination by nutrients and pesticides, especially in areas with poorly brown soils with good drainage, and cause an increase in water salinity, especially in arid regions.

In the northeastern hinter country, the physical characteristics combine to form an environment of difficult survival, in which the biota and the local fauna have adaptations to this. Thus, the landscape is dominated by extensive areas of low altitudes, stony soils, shallow and with little organic matter, typical vegetation of caatinga, hills isolated testimonies in the landscape (inselbergs) high temperatures, as well as low rainfall indexes concentrated in a few months of the year.

This semi-arid climate range involves what is called polygon of droughts, which covers the states of: Piauí, Ceará, Bahia, Sergipe, Pernambuco, Alagoas, Paraíba, Rio Grande do Norte and the North of Minas Gerais. In all these states, the problem of drought, combined with social inequalities, is notorious.

Figure 1: Delimitation of the drought polygon in northeastern Brazil

Fonte: ANDRADE, Manuel Correia de. Sertão ou Sertões. In: SILVA, J.B.; DANTAS, E.W.C. ; ZANELLA, M.E.; MEIRELES, A. J. A. Coastline and Sertão. Fortaleza: Graphic Expression, 2006. Apud DANTAS, E. W.C. The Northeast deconstructed or rebuilt? Ends. 2019. Available in <http: journals.openedition.org/confins/21089="">. Access on 21 May 2022.</http:>

The São Francisco River is the only perennial river that runs through this region, denoting a crucial aspect for maintaining the lives of local populations, as well as animals that use the river for desquamation. With the removal of ripiary forests and the deposition of sediments and effluents, its main tributaries are suffering from the silting process, which causes natural imbalance of this river.

Because it is a region with scarce rainfall, when using intermittent tributaries intensely, there is a scenario of water stress, which causes the lack of water to supply the populations. As the lack of water is a problem in this area, it now has even greater economic value compared to other localities, being in the hands of the local government, whose political influence dates back to the times of the Old Republic of Brazil.

These choirs, together with the local political forces, have alternatives to address the problem of lack of water, but to remain influential perpetuate this condition, which is a way of hiding their true interests, that is, obtaining votes from the local population in times of elections, through the exchange of favors. These politicians promote "benefits" that solve the problem temporarily without thinking in the long run, precisely because their interest is not for the good of the population, but to leverage their prestige with them.

As the São Francisco River is the only perennial river in the region, it has a substantial influence to maintain the life of the country. However, in capitalism everything is marketable; even water itself, which is a vital good. Given this situation, the subservient populations are deprived of this natural good and, when there are public policies aimed at serving them, such as the transposition of the São Francisco River, it meets the longings of the hegemonic classes of the regions (FERREIRA E PENHA, 2018).

Projects such as hydroelectric plants unbalance the river's water balance, mainly affecting riverside populations and other animals, which use these waters for desteration. Souza (2000, p. 9)corroborates this idea by reporting that:"hydroelectric works, in general, produce great impacts on the environment, which are verified throughout and beyond the life of the plant and project, as well as throughout the physical space involved".

The Xingó Hydroelectric Power Plant, which is located between the municipalities of Canindé de São Francisco (SE) and Piranhas (AL), despite the benefits generated through the water captured for irrigation projects and electricity generation, changed the natural and social dynamics of the region, especially downstream, where the flow was affected. With this, some practices, such as rhizoculture, have become unfeasible and increasingly seawater enters the course of the river, generating ecological imbalances.

Far from wanting to solve this problem and exhaust the debate, it is infers that the Water Law of 1997 (Law no. 9,433/1997) makes a mistake in establishing an economic value to water when it establishes questions of who should pay more or less for this good, when in fact there should be no such mercantilization, not to mention that large holders of capital do not pay proportionally for the amount they consume, in addition to impacting and receiving no punishment. At the end of the day, the populations of low purchasing power are actually punished.

Thus, water in the semiarid region of the Northeast gains an even greater economic value to the detriment of other regions, since there is scarcity of this good. With the high rates of social inequality, the subservient classes are at the mercy of the political and economic appropriation of local influential groups, which use water as a strategy to receive votes in times of election and perpetuate dependence on them.

Therefore, it is noted that hydrography is a complex system that relates the natural and social aspects, because the human being, whether or not, is part of nature and transforms it according to its needs. Without water, it is not possible to build the material bases of survival that underpin different societies.

The natural aspects such as rock nature, relief, climatic zone, vegetation, soils, all of this relate to influence the distribution of waters around the planet. The human being is one

of the main external agents that alter the distribution of water, because it is able to build catchment works and relocated it in large quantities.

With technological advances and economic development, provided by the capitalist mode of production, it increasingly influences less the unequal distribution of waters around the planet. Economic appropriation has been more relevant to deprive access to certain social groups, which reverberates in social conflicts.

With this, conflicts in relation to the multiple uses of water are problematic that permeate the world. Brazil, despite its water potential, suffers from problems related to unequal use and poor distribution to the populations of this country. The most affected people are not any citizens, but those who serve the longings of capital, that is, the poor.

Considering that the study area of this study was the semi-arid northeast, whose natural and social complexity is great, the edaphoclimatic characteristics of the region attest to its water scarcity, because rainfall indices besides being low during the year are poorly distributed. As water is scarce in this region, it now has even greater economic value when compared to other localities.

As everything in the capitalist production system is commodification, water does not escape the rule, and in the semi-arid, it is appropriated by specific groups, which exert political and economic influences. Thus, these groups often define uses and concessions of the waters in order to remain in power in the region, being water, a guarantee of obtaining votes and subservience by the population, who still experience the practices of a colonelist nature.

When developing public policies to resolve the problem of drought in northeastern Brazil for needy populations, these works are nothing more than something that benefits in a temporary way and, when the project is lasting, such as the transposition of the São Francisco River, it serves groups of greater local economic power.

As a matter of purpose, the correlation between poverty and drought is not at all valid, since economic inequalities and the concentration of water uses deprive the population of access to conditions to survive in this hostile environment. Poverty exists, because capital develops through the social inequalities present in space, that is, for there to be wealth, there needs to be the perpetuation of poverty.

The Water Law 9.433/1997, ensures that water is a vital asset and that it is everyone's right, but at the same time it becomes a resource, because economic value is established. There are contradictions in the law itself, because if water is an indispensable good for the life of all and the economic power of people is unequal, there should never be its commodification.

Therefore, we notice the contradictions inherent to the capitalist system and that influence not only the natural cycle and the systemic chain that surrounds the waters, but also in unequal uses, which end up generating conflicts between different societies, especially in regions where there is water scarcity, as in the semi-arid northeast. As in the current mode of production the laws are not followed and favor the bourgeois class, the Law of Waters 9.433/1997 follows this same logic, because it defines that water is endorsed with economic value, which opens space for contradictions that favor the holders of capital and regional choirs.

CONCLUSION

Given the above, water has multiple connections with the natural systems to which it belongs, that is, the water system connects with the geomorphological, climatic and biological system, influencing and being influenced by them. If there is dissociation between each of these parts, the whole is compromised.

Within biological factors, human action is a protagonist in natural transformations, whether positively or negatively, and water is one of the natural goods that man impacts and appropriates.

With this, water ceases to be a vital good to all living beings, and becomes commercialized by the hegemonic class, starting to have exchange value to the detriment of the value of use. In northeastern Brazil, in its semiarid part, these contradictions are evident, since there water starts to have an even greater economic value, because it is scarce.

Therefore, with the water scarcity combined with social problems, it is noted how the characteristics of the environment are related to the construction of social space by men, which makes this vital good, a resource that is in favor of the accumulation of capital and exchange of favors between regional groups. This is just a human construction, because nature is not at their service, that is, it does not perpetrate social inequalities.

Therefore, when poverty and drought are associated in the Brazilian Northeast, this does not determine the condition of these people, proof of this are the hegemonic groups, which have high son of capital and can produce wealth even in adverse situations, such as in irrigated perimeters, but rather socioeconomic inequality, which is conditioned by the system.

Therefore, economic and political imperatives often define this unequal distribution of water in one place, which causes conflicts for this good, since without water no living being can survive, and what happens in this region. Thus, the commodification of water is a reality in the semi-arid northeast and is conditioned by socioeconomic inequalities and not by the scarcity itself, as many want to attest.

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REFERENCES

ACSELRAD, Henri; MELO, Cecília Campello de Amaral; BEZERRA, Gustavo das Neves. Which is environmental justice.Rio de Janeiro: Garamond. 1°ed, 2008.

BARBOSA, A.M.F. et al. Watersheds and conflicts over water use in the state of Sergipe. **Ends**. n.40, 2019. Available in: https://journals.openedition.org/confins/20493. Access: 13 Mar. 2022.

FERREIRA, José Gomes; PENHA, Ivaneide Fontes of The myth of prosperity in the transposition of the waters of the San Francisco River. In: INTERNATIONAL CONGRESO DE AMERICANISTAS, n. 56, 2018, Salamanca. **Social Studios**. Ediciones Universidad de Salamanca es miembro de la UNE Unión de Editoriales Universitarias Españolas, 2018. Available in: (PDF) The myth of prosperity in the transposition of the waters of the São Francisco River (researchgate.net). Accessed: 03 May, 2022.

LIMA, Raul Sampaio de; HANAI, Frederico Yuri. Scope of the concept of hydrological cycle and approaches of human relations with water in scientific research. **Espacios Magazine**. Vol. 38, n.9, 2017, p.7. Available in: https://www.revistaespacios.com/a17v38n09/a17v38n09p07.pdf. Accessed: 19 May, 2022.

MACHADO, Pedro José de Oliveira; TORRES, Fillipe Tamiozzo Pereira. **Introduction to hydrogeography.** 1ª.ed. São Paulo: CENGANCE Learning, 2012.

MAGALHÃES JÚNIOR, Antônio Pereira; BARROS, Luiz Fernando de Paula. **Hydrogeomorphology.** 1ª.ed. Rio de Janeiro: Bertrand Brasil, 2020.

RIBEIRO, M.L. et al. Contamination of groundwater by pesticides: preliminary assessment. **Scielo Brasil,** v.30, n. 3, 688-694, 2007. Available in: https://www.scielo.br/j/qn/a/8hhqVmgS7Kc9vgKdSYPRJjP/?lang=pt&format=pdf. Accessed: 14 Apr. 2022.

RIBEIRO, Wagner Costa. **Political geography of water.** 1ª.ed. São Paulo: Annablume, 2008.
SILVA, Daniel Almeida da. **In (the) environmental intricacies:** nature of urban waters in Aracaju. 2016. Thesis (doctorate)- Geography Course, Federal University of Sergipe, São Cristóvão, 2016.

SOUSA, Wanderley Lemgruber de. **Environmental Impact of Hydroelectric** Plants: a comparative analysis of two approaches. Thesis (master)- Engineering course, Federal University of Rio de Janeiro, Rio de Janeiro, 2000.

TAIOLI, Fabio. **Deciphering the Earth**. National Publishing Company. 2nd ed, 2007.
ZAGO, Luis Henrique(The dialectical method and the Analysis of the real. kriterion, Belo Horizonte, nº 127, Jun./2013, p. 109-124. Available from: Miolo Revista Kriterion Num127.indd (scielo.br). Accessed: 21 May, 2022.

ZAGO, Valéria Cristina Palmeira. The economic value of water - a reflection on the legislation of water resources management of Mato Grosso does Sul. **International Journal of Local Development**. v. 8, n. 1, sea. 2007. Available in:

A_valoracao_economica_da_agua_uma_reflexao_sobre_a.pdf. Accessed: 13 May, 2022.