Socio-environmental impacts caused by hydroelectric dams in northeastern Brazil

Impactos socioambientais causados por barragens hidrelétricas no nordeste do Brasil

DOI:10.34117/bjdv5n11-018

Recebimento dos originais: 07/10/2019
Aceitação para publicação: 01/11/2019

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ABSTRACT

With the advancement of the energy sector in Brazil there was a large insertion of hydroelectric dams, many were installed in the northeast due to the great availability of water resources, thus being one of the main reasons for environmental and social impacts. The work seeks to warn about the socioenvironmental damage in the Northeastern region of Brazil caused by hydroelectric dams today. For the research were used 18 articles, analyzed quantitatively and qualitatively, always seeking data consistently and respecting the research line. After analyzing 13 hydroelectric dams, several social and environmental impacts were observed, such as floods, impacts on local fauna and flora, relocation of people, loss of culture and economic impacts. It has been observed that for decades human action as an intervener has caused numerous damage to the environment and society, as a consequence there has been a noticeable change in the surrounding regions in climate, economic and social advancement of people, as a solution the work suggested the use of new methods for the production of electricity, so that the impacts are smaller and viable to the economy, preserving the environment and the production of electricity.

Key words: Social and environmental impacts, Hydroelectric insertion, Northeast Brazil.

RESUMO

Com o avanço do setor de energia no Brasil, houve uma grande inserção de barragens hidrelétricas, muitas instaladas no nordeste devido à grande disponibilidade de recursos hídricos, sendo uma das principais razões para impactos ambientais e sociais. O trabalho busca alertar sobre os danos socioambientais na região Nordeste do Brasil causados pelas barragens hidrelétricas hoje. Para a pesquisa foram utilizados 18 artigos, analisados quantitativamente e qualitativamente, buscando sempre os dados de forma consistente e respeitando a linha de pesquisa. Após a análise de 13 barragens hidrelétricas, foram observados vários impactos sociais e ambientais, como inundações, impactos na fauna e flora locais, realocação de pessoas, perda de cultura e impactos econômicos. Observou-se que, durante décadas, a ação humana como interveniente causou inúmeros danos ao meio ambiente e à sociedade; consequentemente, houve uma mudança notável nas regiões vizinhas no clima, no progresso econômico e social das pessoas, como solução para o trabalho. sugeriu o uso de novos métodos para a produção de eletricidade, para que os impactos sejam menores e viáveis para a economia, preservando o meio ambiente e a produção de eletricidade.

Palavras-chave: Impactos socioambientais, Inserção hidrelétrica, Nordeste do Brasil.

1 INTRODUCTION

The technological and industrial advancement brought several discussions in the environmental context, which resulted in a certain way the emergence of several international
conferences, such as the Conference of Stockholm and the Rio-92, also known as the Dome of the Earth (Environmental ministry). As a way to minimize the impacts caused by the energy sector, the need to generate clean and renewable energy emerged. In this context, Brazil, presents itself as a country with great hydraulic potential, has as its protagonist the hydroelectric power plants, however, despite being considered a source of clean and renewable energy, the implantation and power generation of the plants Hydroelectric plants has several socio-environmental impacts.

There are currently in the Northeast Region 13 hydroelectric plants, being the implanted in the São Francisco River as the complex of Paulo Afonso, Xingó Hydroelectric plant, Sobradinho hydroelectric power plant (CHESF, 2016). This model of conventional energy entrepreneurship that was implemented in the country, based on the construction of large hydroelectric power plants, brought about serious damage to the environment and the affected populations (LIMA, 2017). The deployments of hydroelectric power plants in the northeast have caused irreparable socio-environmental impacts. Although it emerges as an alternative of clean and renewable production, it is directly linked to environmental impacts and suffering of the affected populations (GIONGO et al., 2015).

The impacts in the regions due to the various interventions made along the course of rivers, has caused modifications affecting the natural cycle of nearby sites, fauna, increased erosion and impacts on agriculture by the loss of agricultural areas (CASADO et al., 2002; HOLLAND et al., 2005; HOLLAND et al., 2008).

It is worth doing the caveat that the impacts in the implementation process provoke a series of socio-environmental impacts, alters the volume and quality of the water of the surrounding sites. They cause direct effects in the reservoirs generating reduction in the number of aquatic species, alters the biophysical processes of estuaries and compromises the water availability in the course of the river (SYVITSKI et al., 2005; SONG et al., 2007; STEVAUX et al., 2008; ZAHAR et al., 2008).

For decades, riverside populations have been impacted by the consequences of energy developments that have been implanted in the river's path, there have been cultural, economic and environmental losses, altering the lifestyle of these communities.

The scientific production linked to the theme of energy generation and the implantation of hydroelectric power plants, is often linked only to environmental impacts excluding social impacts (BARBOSA, 2018). The objective of this research is to evaluate the impacts suffered for decades after the implantation of hydroelectric dams in northeastern Brazil, seeking to make a clear approach and recommendations to minimize the damage caused by the activity.
2 MATERIAL AND METHODS

To construct this work, we initially analyzed several databases and scientific publications on the subject, in order to have consistent results, seeking recent publications, totaling 12 studies. The surveys took place in websites and in the virtual library, such as: Google scholar, Scielo, among others.

Those who had important data were chosen, despite the great collection, it was necessary methods to filter the articles. As a way to filter the researches were determined criteria such as: a) Publication theme, in this part were analyzed the theoretical and empirical Materials B) journal that was published, C) Publication area D) publication year E) main Results of studies, this latter criterion was divided into categories: environmental impacts, socio-economic impacts, health damage. The bibliographies used for this review article took between 2000 and 2019.

The data were analyzed quantitatively and qualitatively, in the first moment were analyzed qualitatively, where the narrative of the text should fit in the line of the research satisfactorily, in the second moment there was a quantitative analysis. The numerical data of the researches were observed, in order to obtain a more precise result on the case.

3 RESULT AND DISCUSSION

The realization of the bibliographic review observed the impacts on the environmental, cultural and the damage caused to the population. In the period 1960 there were 1990, the northeast suffered several irreparable environmental damage due to the implementation of hydroelectric dams, the Great Lakes changed the environmental scenario of each site and adjacent regions. The construction of hydroelectric plants resulted in numerous socio-spatial conflicts caused by the withdrawal of the population affected and by the serious environmental problems resulting from its construction (FOLHA SERTANEJA, 2015).

According to Collischonn, the main social impact verified is the displacement of the population that inhabited the area that was flooded with the construction of large reservoirs, among the socio-environmental impacts there are cultural losses with flood of parks Archaeological sites and relocation of native peoples. The construction of the Sobradinho hydroelectric plant has a remarkable history of social and environmental impacts, highlighting the socio-spatial impacts produced leading to the relocation of 64000 inhabitants (PEREIRA, 2012; RODRICK MALTA, 2007).
The implementation of the Paulo Afonso complex located in the state of Bahia, which has 5 large plants and has a total power of 4,279,000 and 600 kW (CHESF, year). Despite its great importance for the national energy sector its implantation resulted in large losses of territories, areas used for agriculture and urban area (MENDONÇA; BRITO, 2007). In the progress of the complex with UHE Apolônio Sales, in the socio-environmental and economic point of view brought great damage to the population that had to be removed from their homes with the filling of the reservoir.

Iso in an emergent way the deployments of hydraulic projects, is inaugurated in 1994 the HPP of Xingó, located between two states Alagoas and Sergipe, of great economic importance. In the construction process of Xingó HPP, it was possible to verify the impacts caused as flooding of extensive areas, causing habitat loss and favoring the creation of others. The cycle of natural floods downstream of the HPP in certain localities (SÁ, 2012) was extinguishing
The losses caused by the HPP are scattered throughout the Northeast in 6 states, and are directly linked to climate change, fauna, urban and cultural change, totaling about 5254.8 km² of areas affected by large reservoirs and about 20,400 families had to leave and their homes and were compensated and relocated.

4 CONCLUSION

It was observed that for decades the northeast suffered with the action of Man, in search of modernity and technological advancement, for this it was necessary to explore one of the most precious goods, water. Thirteen hydroelectric plants were erected, a major technological breakthrough, and a major environmental setback, extinguishing species, disrupting climates, flooding areas and directly affecting agriculture, and people living with fisheries, it was necessary to seek policies Public to compensate, but it is noticeable that the damage caused are irreversible, and several of them irreparable. In this way it is necessary to seek new sources of energy, which causes fewer impacts, such as solar energy, wind energy and other sources of renewable energies, should have on the part of the State a greater incentive, thereby fostering the market Energy and compensating for the damage caused in the past with sustainable solutions.

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