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Sustainable practices adopted at the substation construction site of the Canudos - BA wind complex

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1 INTRODUCTION

The construction industry performs one of the most important and oldest activities associated with the economic and social development of a given region, however, the construction industry assumes the role of potential generator of environmental problems (OLIVEIRA, 2015).

The impacts caused within a construction site are present in all stages, from preliminary services to the completion of the work, where plant suppressions may occur that will affect the entire ecosystem, as well as the use of various natural and industrial resources that cause the generation of waste. Thus, the process of applying the 3R's (reduce, reuse and recycle) should be present in all stages of construction to minimize negative environmental impacts of any kind and nature (DE LUNA, 2021).

Because it is potentially polluting, the construction industry has a growing interest in solving environmental issues, making the adherence of sustainable construction sites and construction indispensable nowadays (CHAVES, 2014).

NBR 12284 (ABNT, 1991) defines construction sites as "areas destined for the execution and support of the work in the construction industry, divided into operational areas and living areas. Regulatory Standard 18 (MTE, 2020) defines a construction site as "a fixed and temporary work area where support operations and execution of a work are developed.

Within the construction sites there is a large generation of construction waste, often causing the improper disposal of this waste, deposited in vacant lots, public roads or even environmental preservation

areas. The reuse of materials has been one of the fundamental alternatives proposed to reduce waste disposal in order to change the serious situation in which the planet finds itself (TOPPEL et al., 2020).

There are several practices that can be adopted to make the construction site a sustainable place in a viable way. Thus, the present study aimed to list the sustainable practices adopted by the construction site of the Canudos wind farm complex, in Bahia.

2 METHODOLOGY

The present study was carried out at the construction site of the substation of the Canudos wind complex (Figure 1), located in the mesoregion of northeast Bahia, bordered by the municipalities of Uauá, Monte Santo, Jeremoabo, Rodelas, Novo Triunfo, Macururé, and Chorrochó (Figure 2).

Figure 1: Construction site of the wind farm complex in Canudos- BA. (Source: From the authors, 2021)

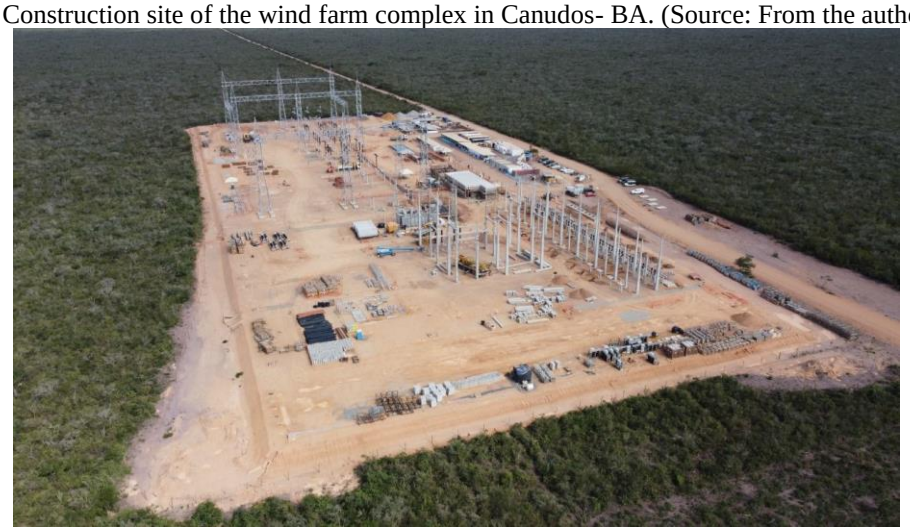
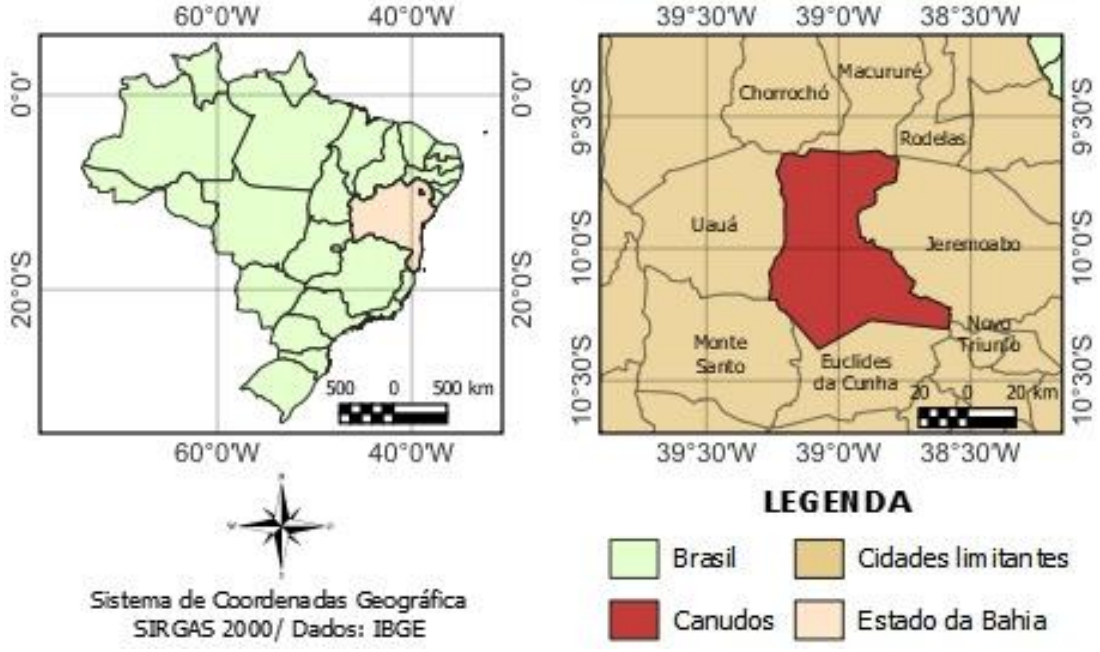


Figure 2: Location of Canudos in Bahia (Source: From the authors, 2021)



Source: The authors, 2022.

The company, which operates in the field of the implementation of a system for the production of clean and renewable energy, being wind power, counted on the contribution of approximately 800 employees working simultaneously, the work began in December 2020 with an expected completion in the year 2022.

The research sought to identify, list, and describe from observation and photographic records, the sustainable practices that were adopted by the company and employees, being a research characterized as exploratory and descriptive (FONSECA, 2002, GIL, 2007).

3 CONCLUSION

With the technical visit carried out at the construction site of the wind farm complex, several sustainable actions were verified, which were registered through photographs that will be listed below.

During the construction process, wood is a widely used element, and when leftovers are generated, furniture is made for general use on the construction site. As shown in Figure 3, tables, chairs, and other furniture located in the living areas were made. This practice avoids the disposal of wood and generates savings in the acquisition of furniture (REZENDE E JARDIM, 2021; DE SENA, 2016).

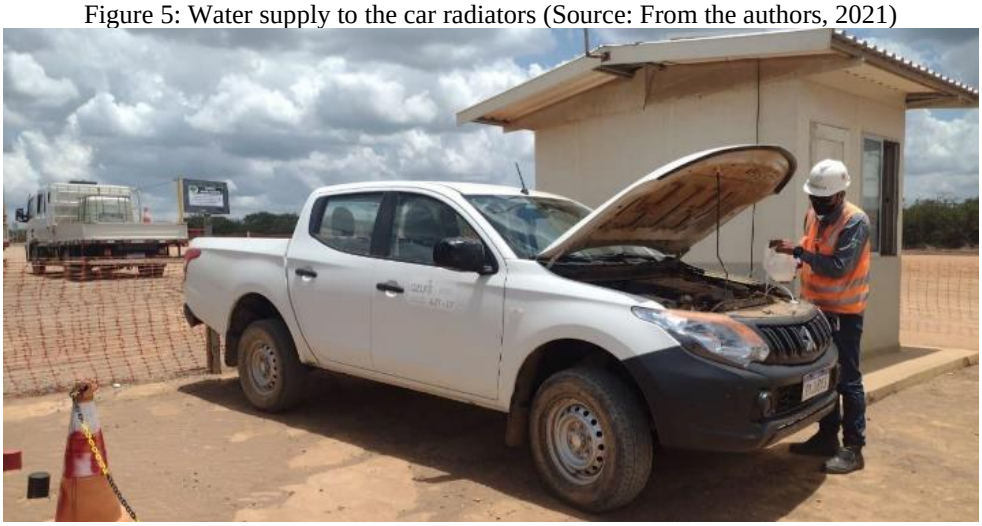
Figure 3: Furniture made with wood scraps (Source: From the authors, 2022)

Another sustainable practice adopted by the company is the use of water generated by air-conditioning (Figure 4). Carvalho, Cunha and Faria (2012) consider the water discarded by air conditioning to be an alternative source of great potential for use, which contributes directly to water conservation.

Figure 4: Collection of water from air-conditioners (Source: From the authors, 2021)

The water collected is intended for the operation of the radiators of the cars that make up the company's fleet (Figure 5). Akram et al. (2018) after a series of physicochemical quality analyses of water from air conditioners, verified the viability of its use in car radiators. Magrini et. al (2015) also performed quality analyses where the application in regions with hot and humid climates was shown to be advantageous

Figure 5: Water supply to the car radiators (Source: From the authors, 2021)



The same water is also used for irrigation of some native caatinga palm trees, the Licuri (*Syagrus coronata), which* are inside the flowerbed (Figure 6).

Figure 6: Irrigation of Licuri (Source: From the authors, 2021)

The company responsible for the construction, when arriving at the site of the implementation verified the existence of several Licuris, which serve as food for the Blue Lear Macaws that live in the region. As the Licuris were in the construction site, the company opted to replant them in another nearby location and they are frequently irrigated by the company's employees, as can be seen in Figure 7.

Figure 7: Irrigation of the replanted Licuris (Source: From the authors, 2021)

Selective waste collection was also present in the construction site (Figure 8), classifying the residues according to their origin so that they can be correctly disposed of.

Figure 8: Selective collection (Source: From the authors, 2021)

The adoption of sustainable practices was conducted by the employees, who received support from the company for the accomplishment, aware that each initiative taken makes the environment more sustainable and favorable for the preservation of the environment.

Conclusions

The construction industry is a sector with great polluting potential, contributing directly and intensely to the emission of greenhouse gases, causing environmental problems to worsen and compromise the welfare and quality of life of current and future generations. Knowing this, it is of utmost importance that companies in this industry seek to minimize these negative impacts on the environment, implementing measures and sustainable campaigns, polluting less and consuming consciously.

In this study we observed the commitment and engagement of the employees in sustainable causes in face of the company's incentive, both seeking the commitment to the preservation of the environment and aware of this importance.

Given the current scenario of wear and tear on the planet as a result of human actions, it is important that companies in the construction industry increasingly adopt sustainable measures in order to reduce the damage caused to the environment.

REFERENCES

ABNT. Brazilian Association of Technical Standards. NBR 12284: Living areas in construction sites. 1991.

AKRAM, W., et al. Recycling of Condensed Water from an Air Conditioning Unit. 2018 International Conference on Computer, Communication, Chemical, Material and Electronic Engineering (IC4ME2), Rajshahi - Bangladesh, 2018.

BRAZIL. Ministry of Labor. Regulatory Standard NR-18: conditions and environment of work in the construction industry. Brasília: Secretariat of Labor, 2006.

CHAVES, H. de O. Sustainable guidelines in civil construction: life cycle assessment. Thesis (Doctoral) - Universidade federal do Rio de Janeiro, 2014.

DE LUNA, F. C.; FREITAS, F. B. Sustentabilidade em Canteiros de Obras. Epitaya E-books, v. 1, n. 6, p. 311-337, 2021.

DE SENA, R. G. Do rubble removed from the Brazilian railway network: reuse of the crossties. 2016.

FONSECA, J. J. S. Metodologia da pesquisa científica. Fortaleza: UEC, 2002. Apostille

GIL, A. C. Como elaborar projetos de pesquisa. 4. ed. São Paulo: Atlas, 2007.

JARDIM, L. P.; REZENDE, D. WOOD FROM CIVIL CONSTRUCTION: Alternatives for reuse and recycling for society. 2021.

MAGRINI, A., et al. Water Production from Air Conditioning Systems: Some Evaluations about a Sustainable Use of Resources. Sustainability, n. 9, 1309, 2017.

OLIVEIRA, Debora Negri de. Proposal for adequacy to sustainable construction: technologies and alternatives for educational institutions. 2015.

TOPPEL, P. V.; HORN, J. A.; WENINGHAMP, J. E. Reutilization of waste at construction sites in sustainable buildings. Innovatio Journal, v. 3, 2020.