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Comparative Analysis of Well Drilling Techniques for Natural Resources Access and Energy Recovery

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The development of today's society depends directly on the exploitation of natural resources and their use in different fields, from direct consumption on a daily basis for different activities and final use.

Some of these resources

deserve to be highlighted because of their vital importance for society's development, such as groundwater, oil, and gas, while others deserve attention for representing alternative solutions in some specific situations, including

access to white hydrogen and energy production from geothermal systems. Although different in essence, all the resources mentioned have one characteristic in common: all are extracted from the underground through well drilling.

That being the case, the work developed aims at expanding the knowledge about exploration processes through a basic comparative analysis of drilling costs and techniques for accessing these resources.

All the analyses are based on a consistent literature review of relevant sources, covering technical economical aspects along with details of equipment employed, drilling methods used, characteristics of well completion, and characteristics

the involved elements (chemical and physical characteristics). From this study, similarities were observed in terms of drilling mechanisms, but due to differences in properties between the resources, there are some

particularities in each of the processes, especially related to the necessary well length and equipment's materials, reflecting most in the associated costs. In terms of exploratory process overall, it could be observed its direct

relation to the physical and chemical properties of each type of resource, ultimately associated with their process of formation/storage in the underground.

KEYWORDS: Comparison. Drilling. Natural Resources. Groundwater. Geothermal. Oil and Gas.