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Understanding and Addressing Drought Hazards in Australia

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Abstract

Australia, a country renowned for its grasslands and rich ecological system is currently facing the threats and challenges caused by drought hazards. Persistent droughts defined by prolonged episodes of shortages of water and decreasing rainfall remain a common environmental occurrence in Australia (Nate, 2023). In this regard, strong mitigation and adaptation measures are anticipated. This essay will first describe the mitigation strategies needed to manage the hazard. Then it will discuss the different adaptation strategies that can be undertaken. Finally, it will evaluate the strategies, their advantages, and limitations to address the pressing crisis concerning drought hazards in Australia. The main purpose of this research is to understand and evaluate the mitigation and adaptation strategies for drought hazards in Australia.

Keywords: Australia, Drought Hazards, Mitigation and Adaptation Strategies, Evaluation.

Introduction

Droughts are frequent natural occurrences in Australia, a continent marked by its fluctuating climate and vulnerability to severe weather events. The Australian Bureau of Meteorology (BOM) defines drought as a period of low erratic rainfall that lasts for three months or more. But current patterns show that these occurrences are becoming more frequent and severe which raises question about their long term effects. The Millennium drought that affected southern Australia from 2001-2009 is said to be the one of the worst drought on record for Australia resulting in significant water shortages and financial difficulties. Droughts have far reaching impact on the sustainability of ecosystem, water availability, agricultural output, and economic stability. Australia has responded to these challenges by putting in place a significant number of adaptation and mitigation measures, from technical advancements to legislative changes with a goal of increasing resilience to possible future droughts.

Mitigation Strategies

Mitigation strategies to address drought hazards in Australia can be attained by adopting the practice of sustainable farming and reducing carbon footprints. A report by the Department of Agriculture (2019) highlighted the importance of sustainable farming to mitigate drought hazards in Australia (p.3). This proves that the Government of Australia has taken proactive

measures to help the farming communities by providing them with timely incentives to make farming sustainable and reduce drought hazards. The primary objective of the Government of Australia is to support the farming family by keeping agricultural land pests free since they put additional pressure on the groundwater of the farmland. This helps to minimize the human-induced impact on land thus preventing drought hazards. Study Group Australia (2023) emphasized on reducing carbon footprints by adopting renewable methods to mitigate drought hazards in Australia. This proves that emphasis in Australia is given to reducing carbon emissions by adopting greener and more renewable energy resources. Limiting carbon footprints helps Australia to mitigate severe weather occurrences such as droughts. Therefore, it proves that reducing carbon footprints contributes to a sustained and adaptable Australia thereby mitigating drought hazards. Overall, it can be said that mitigation strategies such as sustainable farming and reducing carbon footprints hold prominence in mitigating drought hazards in Australia.

Adaptation strategies

Adaptation strategy to address the drought hazard in Australia can be attained by adopting water conservation strategies such as setting up desalination plants and construction of dams. A report by the National Climate Resilience and Adaptation Strategy (2021) mentioned the adaptation of desalination plants in Perth to address drought hazards in Australia (p.18). This proves that the adaptation strategy of setting up desalination plants by the Government of Australia ensured a reliable water supply to reduce drought hazards in Australia. This initiative played a crucial role in managing the water supply in Australia by diversifying the water resources of the state. This decision helped Australia to adapt to and prepare for the possibility of future drought hazards in Australia. Study Group Australia (2023) mentioned the construction of dams as an adaptation strategy to address drought hazards in Australia. This proves that building dams is a crucial adaptation strategy to enhance water storage for future use in times of drought in Australia. Dams ensure regular flow of water in the metropolitan areas during drought-induced water shortages in Australia. It proves that the construction of dams enables Australia to ensure resiliency towards water crises during drought hazards. Overall, it can be said that adopting adaptation strategies such as setting up desalination plants and construction of dams plays a crucial role in addressing drought hazards in Australia.

Evaluation of the strategies

Evaluation of the above-mentioned mitigation and adaptation strategies requires a thorough analysis of their advantages and disadvantages in addressing drought hazards in Australia. Sustainable farming helps in preserving water resources in areas that are vulnerable to drought. This can be achieved by investing in natural resources management. For example, the Future Drought Fund in Australia provides a regular revenue source to build resilience to drought (Department of Agriculture, 2019, p.25). However, the disadvantages of the strategy lie in the preliminary installation expenses which some farmers might find difficult to afford. Recommended use includes encouraging early learning initiatives, providing monetary

incentives, and incorporating sustainable farming concepts into farm laws. Additionally, approaches such as agro-forestry will improve soil capacity by increasing its water retention capacity. Similarly, reducing carbon footprints by shifting towards renewable energy mitigates the climate change effect thereby reducing the occurrence of drought hazards. Australia can mitigate the possibility of drought hazards by lowering its dependence on fossil fuels. Nonetheless, there exist certain drawbacks as economies that largely rely on energy from fossil fuels might face financial problems associated with moving to low-carbon economy. Desalination plants help produce quality drinking water, diversify water resources, and ensure steady water supply during droughts. Desalination reduces pressure on naturally occurring water resources by using saltwater as an alternative water source. However, this strategy has environmental consequences and the cost of setting up desalination facilities raises concerns regarding their feasibility. Giurco et al. (2014) highlighted limitations of desalination plants. This is because they consume large amounts of energy and can have a negative impact on the environment. They also are expensive to operate. The recommendation in this regard will be to emphasize on environmental impact evaluations to maintain long-term viability. In Australia, the construction of dams is another effective adaptation strategy to mitigate the effects of drought hazards. It ensures increased water storage capacity. Bland (2023) discussed the advantages of dam construction in Australia with a focus on the Wivenhoe Dam in Brisbane and the Warragamba Dam in Sydney. Dams are effective at mitigating the drought hazard in Australia as they can retain large amounts of water and provide a steady water supply in the adjoining cities during droughts. However, there are certain limitations. A study by Bland (2023) highlighted the limitation of dam construction since the cost of new dams is significantly higher. Additionally, building dams might change ecology and disturb the surroundings. To address possible environmental repercussions, constructing a climate resilient dam design can be recommended. A recommended strategy involves an integrated approach where regional desalination facilities are complemented by accurately engineered dams, lower carbon footprints, and sustainable farming techniques. This all-encompassing strategy needs to take into account local climate variances. It ensures a more adaptable and reliable response to drought hazards in Australia. Sustainable farming makes agriculture more productive and profitable. Shifting towards renewable energy reduces carbon footprints. Afforestation and reducing emission of chlorofluorocarbons are effective as well. Desalination plants ensure a steady supply of water during droughts. Dam construction plays a crucial role in addressing drought hazards. Overall, it can be concluded that these strategies are effective in addressing the perennial problems of drought hazards in Australia.

Conclusion

To sum up, mitigating and adapting drought hazards in Australia mandates a multimodal strategy. Sustainable farming is crucial in mitigating man-made drought hazards. At the same time, limiting carbon footprint limits drought hazard in Australia. Meanwhile, desalination plants as an adaptive strategy are useful to address drought hazards. Finally, dam construction plays a major role in resisting drought hazards in Australia. Effective use of these strategies

depends on the evaluation of socio-economic and environmental aspects. Building resilience in the face of escalating drought issues requires integrating these methods into an all-encompassing framework. Combining these approaches is necessary for a systematic and successful way to handle drought hazards in Australia. Therefore, by adopting these strategies Australia can more effectively manage drought hazards.

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