

A Study of Environmental Pollution Associated with the Archaeological Site of Sigiriya, Sri Lanka

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Keywords - Sigiriya, Environmental pollution, Archaeological site, Sri Lanka, Sustainability

Introduction

Sigiriya is a UNESCO World Heritage Site, but environmental pollution is a concern due to tourism and modern developments. Sigiriya, or Lion Rock, is a fortress palace built atop a massive rock formation in the 5th century. It is home to frescoes, gardens, and an advanced water management system. However, there are concerns about potential pollution sources and waste management issues. This study aims to analyze environmental pollution in Sigiriya through a multidisciplinary approach, examining air pollution, water pollution, noise pollution, and waste management practices to identify key sources and factors contributing to pollution. This research will provide valuable insights for policymakers, conservationists, and local communities to ensure sustainable development and environmental management at Sigiriya

Methodology

This study utilizes a combination of field observations and previous research to assess the environmental pollution associated with the archaeological site of Sigiriya, Sri Lanka. The methodology is designed to gather comprehensive data on pollution sources, their impacts, and potential mitigation measures. Field observations involve on-site data collection, including air pollution, water pollution, and noise pollution. These observations will be conducted at different locations within and around Sigiriya to capture the spatial variability of pollution. In addition to field observations, this study extensively relies on previous research conducted on Sigiriya and other relevant archaeological sites. Literature review and analysis of existing studies will provide valuable insights into the historical trends, environmental challenges, and preservation strategies specific to Sigiriya. This information will serve as a foundation for understanding the context, identifying research gaps, and formulating appropriate recommendations. The combination of field observations and previous research allows for a comprehensive analysis of the environmental pollution at Sigiriya. It enables the identification of pollution sources, the evaluation of their impacts, and the formulation of effective mitigation strategies. The field observations provide real-time data, while previous research provides historical and contextual information, ensuring a well-rounded understanding of the environmental pollution associated with Sigiriya.

Results and Discussion

• Air Pollution

During a field visit to the area where Sigiriya is located, it was revealed that there is a significant level of air pollution in this area. The primary sources of air pollution are identified as vehicle emissions, construction activities and biomass burning. High tourist arrivals and increased urbanization have contributed to increased vehicular traffic, resulting in higher pollution levels. It was revealed that this air pollution indirectly affects the ruins of Sigiriya. The findings highlight the need to implement stricter emission standards and promote sustainable transport options to reduce air pollution around Sigiriya.

- Water pollution

It was revealed that the waste such as polythene, plastic and paper disposed of by local and foreign tourists in the relevant archaeological site is not done properly and the water is polluted. As a result, aquatic organisms and aquatic plants living in freshwater can be identified as damaged. Addressing water pollution requires stricter regulations, sustainable agricultural practices, and improved wastewater treatment infrastructure.

- Noise Pollution

The study identified significant noise pollution in the vicinity of Sigiriya, primarily due to increased tourism activities and construction activities in the vicinity of Sigiriya. Noise levels exceeding permissible limits adversely affect cultural heritage sites and disrupt natural habitats. Excessive noise disrupts the tranquility of the area and affects the overall visitor experience. Effective management strategies, such as limiting construction activities during peak tourism periods and establishing designated quiet zones, are critical to reducing noise pollution and preserving the tranquility of Sigiriya.

- Waste Management

The findings revealed inadequate waste management practices in the Sigiriya area. Improper waste disposal and lack of recycling facilities contribute to the accumulation of solid waste, including plastic, in and around the archaeological site. The increasing volume of waste generated by tourists and local businesses poses a significant challenge. Developing efficient waste management systems, including segregation, recycling initiatives, and public awareness campaigns, is crucial for maintaining the cleanliness and ecological balance of Sigiriya.

In addition, the loss of habitat for animals can be seen as a major environmental problem in the area around Sigiriya. The results of this study highlight the urgent need for comprehensive environmental management and sustainable development strategies in the Sigiriya area. The pollution sources identified, including air pollution, water contamination, noise pollution, and waste mismanagement, pose significant threats to the cultural heritage, natural ecosystem, and overall visitor experience. The integration of these findings with previous research emphasizes the importance of considering historical context and long-term preservation efforts in addressing environmental pollution.

To ensure the sustainable future of Sigiriya, collaborative efforts among government authorities, local communities, and relevant stakeholders are vital. Implementing stricter regulations, promoting eco-friendly practices, enhancing infrastructure, and raising awareness among tourists and locals are key steps towards preserving the environmental integrity and cultural significance of Sigiriya, while still allowing for responsible tourism and development. Only through such concerted efforts can Sigiriya continue to inspire and captivate generations to come.

References

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