

A study on Risks of Earthen Architecture due to Climate Change



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ABSTRACT

Climate change (CC) is one of the biggest common problems of humanity. We have only the IPCC reports as main source to understand the issue. In the latest published IPCC report on CC, it is asserted that if necessary measures are not taken, the adverse impacts of CC will emerge sooner than predicted. Despite, the issue affects all over the World in different sizes and forms, the governments still have not taken the necessary and realistic steps to solve the problem. This situation makes heritage more vulnerable to CC.

Some traditional materials such as earthen are more susceptible versus the CC impacts. Therefore, adverse impacts of CC on adobe heritage should be identified and measures should be taken before CC damages the heritage irreversibly. For this reason, in this study, it is aimed to define the general indicators of CC that emerge risks for cultural heritage and, address vulnerability of adobe heritage.

While some of the degradation mechanisms in cultural heritage arising from climate change are fast developing and measurable effects, some are slow and long-term impacts. The most damaging risks of CC to the cultural heritage are related to meteorological events such as extreme rains, flash floods, heat waves and droughts. In addition, unfortunately now the changing climate emerges the risk of occurrence of these weather events successively, especially extreme rain after drought terms. Both drought and, extreme rain are severely hazardous to the adobe heritage because of its material properties. After the drought term, the earthen material becomes more brittle form and, if any flash flood event occurs right after this term, it is devastating for the heritage. In the scope of this study, the CC impacts on cultural heritage and, the emerging risks of the Earthen Architectural Heritage are defined in general.

Keywords: Climate change impacts on cultural heritage, Adobe heritage, Sustainability