**Earthen construction: an energy efficient solution to improve the climate resilience of cities in the Netherlands?**

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Buildings and construction together account for 36% of global energy use and 39% of energy and process-related carbon dioxide emissions. The high impact of buildings on environment is partially due to operational needs, such as space heating and cooling, and partly due to energy intensive production of cement and steel that is responsible for construction related emissions. A construction material that not only requires minimal energy for production but is also capable of regulating the indoor climate can significantly improve energy efficiency of buildings. One such natural material that can regulate the indoor climate is unfired ‘mud’, also known as ‘soil’ or ‘earth’.

Building with (unfired) earth is an old construction technique that has been practised for over 10 000 years. With growing concerns over climate and an increase in awareness towards indigenous and ecological building materials, earthen construction is re-gaining popularity, especially in the neighbouring countries of the Netherlands. The characteristics of earthen materials such as its ability to absorb and release moisture improves indoor thermal comfort and air quality, thereby providing a healthy environment. Moreover, earthen structures require low energy for space cooling or heating, resulting in reduced energy consumption which can also contribute in mitigating the urban heat island effect. In addition, the low-intensity energy demand of production and potential to reuse can further contribute towards the improvement of climate resilience of cities.

This presentation will discuss a broader prospective on earthen materials, including their history, characteristics, limitations and opportunities in Netherlands. In addition, recent efforts to produce earthen blocks with cow-dung as an additive to improve the water-resistance properties are elaborated. The future plans on upscaling will be discussed, together with its potential in improving climate resilience of cities in Netherlands.