KÉRÉ ARCHITECTURE - BUILDING ECOLOGICAL AND SUSTAINABLE SCHOOLS IN BURKINA FASO

The studio Kéré Architecture, continues to build innovative constructions for educational facilities in Burkina Faso combining local materials and knowledge and modern construction techniques. Founded by Diébédo Francis Kéré in Berlin in 2005, the studio contributes to creating new solutions for sustainable architecture, while investing in knowledge exchange and adopting a strong social commitment.

After creating the Kéré Foundation the first work carried out by Kéré in his country of origin was the primary school of Gando in the Province of Boulgou, in the east of Burkina Faso. The primary school was built cooperatively by a whole village community.

The school was designed to address two main problems of educational local buildings, such as poor lighting and ventilation, taking into account parameters such as cost, climate, resource availability and construction feasibility. Clay is abundantly available in the region and traditionally used in house building, so a clay/cement hybrid was used to create structurally robust bricks. These are easy to produce and provide thermal protection against the hot climate. To protect the walls from damaging rains corrugated metal roofs are the most popular solution, although they absorb the direct sunlight and overheat the interior of the buildings. The design solved this problem by pulling the roof of the school away from the learning space of the interior. A dry-stacked brick ceiling is introduced in between, allowing for maximum ventilation: cool air is pulled in from the interior windows, while hot air is released out through perforations in the clay roof. This solution allowed to make the inside up to six degrees cooler than it would be with the traditional design, reducing the ecological footprint by alleviating the need for air-conditioning.

Throughout the design and construction process, working with local masons, traditional building techniques and modern engineering methods were combined to produce the best quality building solutions while simplifying construction and future maintenance. Inspired by this model, two neighbouring villages have entirely built their own labour their new schools, funded by community members living away from home. The innovative construction was recognized by the Aga Khan Award for Architecture 2004, and by the Global Award for Sustainable Architecture 2009.

With the support of the Gando community and funds raised through the Kéré Foundation, the architect also has built six houses aimed at attracting qualified teachers to join the staff at Gando Primary School. The houses are made up of a series of adaptable modules, which can be combined in various ways into larger composites, depending on evolving needs.

The success of these projects has encouraged the Community of Gando and Kéré Architecture to design and build with the support of the Foundation a school complex to accommodate the growing teenage population of Gando and its surroundings: the Naaba Belem Goumma Secondary School. For this new work, always combining modern and vernacular construction methods, the design pioneers a new building technique: in-situ cast walls made of poured local clay mixed with cement and aggregate.

This innovative method allows for a faster building process and greater architectural flexibility than the traditional clay bricks, while being more sustainable and less expensive than concrete. The clay walls are protected from damaging wind-driven rain by large roof overhangs, as well as eucalyptus wood façades. The double façade creates a shaded buffer zone between its two layers, which helps to cool down the classrooms and provides a breakout space for students to use between lessons. The Gando Teachers' Housing project and the Secondary School of Gando were recognized by the BSI Swiss Architectural Award 2010.

The innovative technologies adopted in Gando have attracted the interest of the Stern Stewart Institute which has commissioned Kéré Architecture to design and build the Lycée Schorge Secondary School, located in Koudougou, the third most populated city in Burkina Faso. Completed in 2016, the school sets a new standard in the region and provides an inspiring showcase of local building materials applied to an innovative design. In addition, in order to minimize costs and reduce material waste, the school furniture is made from local hardwoods and steel offcuts from the roof construction.

The Stern Steward Institute has also charged Kéré Architecture to expand the campus of their university in Koudougou with new buildings to offer more high school graduates an opportunity to continue their education. building of the Burkina Institute of Technology have walls made with locally sourced clay and screens of eucalyptus wood. It is composed of a series of repeated modules that contain classrooms, lecture halls and auxiliary spaces. The modules are placed in a staggered formation to facilitate airflow in and around the building. The rooftop openings are designed to release warm air through the stack effect, a technique that naturally ventilates buildings by expelling rising hot air. The building is complete with an extensive landscape design to protect the university during the rainy season. It works by channelling water into a large underground tank where is stored and available for irrigating mango plantations on the campus. The Institute is completed and already used for the educational activities.

Kéré Architecture is currently working in a large number of innovative architectural projects, ranging from the Benin's National Assembly, which is modelled on the African palaver tree, to the Tippet Rise Art Center in Montana, USA, which was crafted from dead trees. However, with the support of funds raised through the Kéré Foundation, the Studio continues to carry out architectural projects in communities and with the direct participation of local populations, rescuing their traditional knowledge and combining technological improvements that make buildings suitable to meet modern needs.

Kéré Architecture's contribution is widely recognized internationally by magazines specialized in sustainable architecture. The designs, documents and photos published on the Kéré Architecture website and in the articles of these magazines allow to learn more about the outstanding innovative features and beauty of the works carried out.

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BSI Swiss Architectural Award 2010

Article in akdn.org website

Diébédo Francis Kéré in Dezeen.com

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