



IT'S A HUMAN RIGHT

The architects at Active Social Architecture follow the philosophy that good design is not a privilege, but a right. They have a series of Early Childhood Development and Family centres throughout Rwanda that epitomise this belief while practising sustainable development.

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PHOTOGRAPHS ASA STUDIO



Active Social Architecture (ASA) is a Kigali-based architectural firm built on the principle that good architectural design is a basic human right. The firm designed and managed the construction of 11 early childhood development and family (ECD&F) centres in nine Rwandan districts.

“There is a misconception that architecture is a luxury,” says ASA co-founder Nerea Amoros Elorduy, “that design is a luxury and that poor people just need a facility, or a container off-programme, whereas actually, design should be a right. It should work to improve people’s lives.”

The ECD&F centres gave ASA scope to fulfil its mission of showcasing the potential for empowerment and education through architecture. The buildings provide safe and healthy environments with good light, ventilation and thermal insulation as well as access to water and sanitation facilities, and in so doing, they enable attention on childhood growth and development.

SOCIALLY ACTIVE ECOSYSTEMS

ASA’s brand of socially active ecosystem design found a welcome home in Rwanda, where communities work together to build and maintain required infrastructure. On the last Saturday of every month all Rwandan adults take part in compulsory Umuganda – community work where citizens come together in common purpose to achieve an outcome, be it public works, infrastructure development or environmental protection.

Umuganda was put in place by the Rwandan government to rebuild the nation and foster a shared national identity rather than deepening ethnic divisions. While there is definite interest in environmental sustainability, there is also great interest in improving education and healthcare throughout Rwanda. Sustainability hones in on

social issues because the nation is recovering from years of civil strife and war atrocities.

Over 85% of the Rwandan population lives in rural areas, which often lack basic infrastructure. Rural communities meet every week and discuss their villages’ issues and needs. These tasks are then tackled during voluntary work hours on Wednesdays or monthly Umuganda. ASA became involved with communities where the ECD&F centres were to be constructed through these meetings.

ASA principal architect Alice Tasca says communication was the first big challenge to overcome as none of the European architects could speak Kinyarwanda. With the help of interpreters and continued interaction with the communities, communication became easier. Appointing a local foreman and engineer also helped.

The way plans were presented was also adjusted. “We experimented with a new presentation system to make the drawings more clear and understandable,” says Tasca.

EARLY LEARNING

A staggering 43% of Rwandans are under the age of 15 years. “There are so many children everywhere in Rwanda in need of care,” notes Tasca, adding that the community – particularly women – welcomed the opportunity for a safe place to leave their children while they worked.

The ASA team became immersed in the Rwandan education system through lecturing at the university, and this is where they explored the reasons behind students’ lack of abstract thinking and difficulty in understanding tri-dimensional and human space proportions.

“This has been scientifically demonstrated to be related to a lack of stimulation at an early age,” explains Tasca.

With this in mind, ASA’s projects included elements and colours that encouraged children’s sensorial stimulation, with the aim that in 20 years – through the construction of more ECD&F centres with these features – the education system could be enhanced and the students could have a better learning path up to academic level.



In addition to childhood development, the design team learned that the community needed free access to water. They included a 35 000L underground rainwater tank so that the centres could provide a valuable resource for the greater community's daily use. Water from the tank was also used during construction.

The tank is a masonry brick dome with reinforced concrete foundation, and an inner and outer layer of waterproof plaster. It collects rainwater harvested from the clay roof tiles of each building. The water is pulled through a fountain activated by a pedal pump with no need for electric power. The children and their families are the primary users of the collected rainwater, but all who live close to the centre can access the fountain.

Nutrition also became a focus of the centres; a large kitchen and vegetable gardens where people

NUTSHELL

Project • Early Childhood Development & Family Centre

Location • Gicumbi District, Miyove Sector, Rwanda

Size • 500m² covered space and 1000m² playground for 75 children up to six years of age

Construction cost • US\$100 000

Start date • September 2013

Completion • May 2014

Opening of facility • June 2014

are able to learn about different cultivation practices were included in the design. The kitchen and masonry stove reflect traditional cooking methods, but the design facilitates indoor pollution reduction through proper ventilation that also improves the stove's performance, and integrates a sink, counter and storage.

Early community involvement followed through to every stage of building means there is a strong sense of ownership. The centres are not only used for early childhood development, but also for parenting education, after school homework, community meetings, co-operatives and other activities that encourage community engagement.





“ As a natural ecosystem works without human inputs to adapt to specific climates, this socially active ecosystem will work without architect inputs to empower communities.”

- ALICE TASCA, ASA
PRINCIPAL ARCHITECT

SUSTAINABILITY FEATURES

- Environmental passive low-tech design
- Local materials used
- Locally handcrafted fired bricks
- Locally handcrafted clay roof tiles
- Natural ventilation
- Wood stove
- Vegetable gardens
- Underground rainwater tank
- Composting toilet
- Social child-friendly design and furniture
- Job creation through procurement of bricks and roof tiles
- Community gathering space
- Community playground
- Community pedal-powered rainwater fountain

TWO DESIGNS, 11 SITES

"The conceptual approach to the design rests on two pillars," says Tasca. "It highlights the role of a central space as catalyst for community gathering in a contemporary reinterpretation of the traditional urugo settlement pattern. It also conceives a modular structure, where components can adapt to different terrains and situations, but originate from similar facilities."

There were two main building typologies tested for replicability and adaptability: a circular plan and an S-shaped plan. "Both typologies required adjustments and changes during the construction process in an effort to source locally available materials and transport them to difficult and remote site locations. The typologies also had to deal with different climatic and geological conditions, such as soil types and heavy rainfall," explains Tasca.

Tasca says on one site there was not enough space for either typology and the design required adjustments. While one site had hard volcanic rock, an underground aquifer was discovered during excavation for the construction of the toilet on another. This required extra thought and adjustment to ensure the groundwater was not contaminated.

"Because the sites were often on the slopes of a hill, we had to consider the direction of the wind and the rain," she says. "The ventilation holes

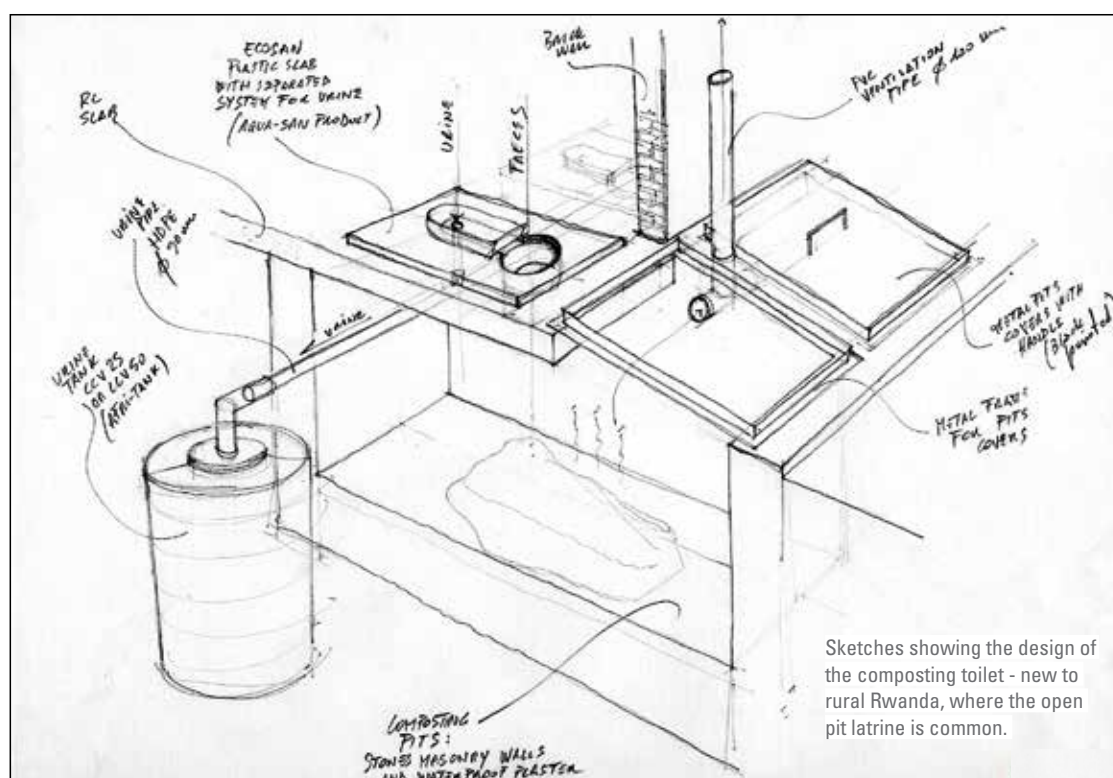
and patterns in the brickwork required strategic placement so that they would not let in the wind or rain." The community was instrumental in providing this kind of information about the site, she says.

BUILDING BLOCKS

In both building types, the five basic elements – stimulation classrooms, multipurpose hall, open demonstration kitchen, administration block and sanitation facilities – are all small-reinforced masonry structures. They were built with locally produced fired bricks, and assembled with Flemish bonds and vertical reinforcement bars to improve stability and mitigate the use of concrete.

The community was taught how to create the materials used for construction and then learned the construction techniques. Thus materials were procured from the community or nearby co-operatives, and local labour was used during construction. Ensuring consistent quality of materials was a challenge and the production time required for new materials slowed construction. Engineers checked progress at least once a week, and jobs were closely monitored. The entire community gained skills.

During Umuganda the community built the retaining walls and planted grass and the vegetable





gardens, helping to keep construction costs more affordable.

Tasca says the brick pattern and multiple openings of varying sizes, placed at different heights in construction, contribute to the sensorial stimulation of small children while providing natural light and cross ventilation. A continuous porch, finished in ceramic tiles, allows for a variety of covered outdoor spaces, for both learning and communal activities.

The single biggest challenge remains the composting toilet. Tasca says pit latrines are standard in Rwanda, however, they pose the danger of contaminating groundwater. The composting latrine was introduced for the first time by ASA, both to avoid groundwater contamination and reduce water use for sanitation facilities. It was viewed as an opportunity to raise awareness of the pollution issues related to pit latrines, however, ASA faced a lot of opposition.

"It was the first time people had encountered anything like it and they did not feel that faeces should be handled at all. Through training and education, supported by university research, we were able to discuss it and explain that it became compost. The urine is separate from the faeces, and the faeces is mixed with water and exposed to the sun for 30 days, and then can be used for cultivating maize, for example. The community saw the benefit," Tasca explains.

But getting the children to use the toilet as intended is difficult as they often go to the toilet alone and are not used to the system. "We are trying to improve the situation," says Tasca. "It is a work in progress, but in future buildings we may just proceed with a sealed pit latrine."

ACCEPTANCE AND OWNERSHIP

"From the start the community loved these buildings. They welcomed the care available to their children and any improvements to their villages. As a natural ecosystem works without human inputs to adapt to specific climates, this socially active ecosystem will work without architect inputs to empower communities," says Tasca.

While the design and construction of the centres may be perceived as "primitive" in developed areas, ASA looks to low-tech architecture as a resource for the communities who identify with it. Through the improved use of local materials and contextualising the building, the communities gain skills that promote environmental sustainability and require minimal maintenance.

There is a thought that in many cases so-called developed countries may be overdeveloped, causing issues that people have forgotten how to solve. With this in mind, ASA's project provides a unique example of how Africa's shortcomings can in fact precipitate leap-frogging into low-tech but more sustainable building. Tasca says ASA would like to prove that truly sustainable architecture is not only green certified, but is deeply contextualised and focused on improving lives. 🌱

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