

# A German Social Start-up on its Mission to Revolutionize the Market for Construction Material in Bangladesh

Humankind, by virtue of science and technology has sent a mission to Mars, but in a developing country like Bangladesh 8000 fire clay brick kilns rely on an out-dated 18<sup>th</sup> century technology—with slavery like working conditions that lead to severe environmental damage. On top of that, millions of families still live in tin shed houses. There must be a better solution! There is: Compressed Stabilized Earth Blocks (CSEB), a proven low-tech solution for developing countries, which is not yet available in the market in Bangladesh.

This is the story of a young German social entrepreneur who moved to Bangladesh, to radically change the market of affordable, eco-friendly and disaster resistant building material.

## The problem: structural, multi-dimensional, and very dirty

In Bangladesh, there are approx. 8000 kilns producing 18 billion fired clay bricks (FCB) per year. The kilns rely on an out-dated, energy inefficient technology with a yearly consumption of 3.5 million tonnes of coal and 2 million tonnes of fire wood. This causes 9 million tonnes CO<sub>2</sub> emissions and severe deforestation. 40% of Dhaka's fine particle pollution is due to kilns. The government passed several laws to prohibit the most inefficient kilns, but they have not been enforced due to corruption and a lack of alternative solid building materials. An attempt of UNDP and the World Bank to convert old kilns into modern, energy efficient ones failed due to the 10-times higher initial investment cost, that FCB owners were unwilling or incapable to bear.

Beside the environmental damage caused by FCB, there are other considerable downsides. The working conditions in the kilns are akin to modern day slavery; especially for unskilled labourers. FCB are unaffordable for many Bangladeshi, who therefore live in corrugated iron sheet shelters, as there is no affordable alternative to FCB (concrete is even more expensive). The price of FCB went up after India increased the price of coal; in addition the poor dimensional accuracy of FCB requires a lot of mortar (and plaster), which means high construction costs. In most cases, FCB houses are not built earthquake resistant, making them a deadly risk in this earthquake prone country. Corrugated iron sheet houses on the other hand do not withstand cyclones that frequently hit Bangladesh.

## Why reinvent the wheel when a proven technology does the job?! Copy paste with a few tweaks.

CSEB is a proven technology that was developed in the 1950s and is being used in more than 30 countries around the world among them South Africa, Mexico and India. The production is low-tech and suitable for unskilled labourers: a mix of soil, sand, water and 5% cement (stabilizer) is compressed in a manual or automated block press. Depending on the type of soil that is locally available, the sand and cement ratio needs to be adjusted. CSEB air-dried for 28 days; the cement makes them strong and water resistant. CSEB dispenses with firing in kilns; this reduces CO<sub>2</sub>-emissions by 75% and prevents deforestation. They can be produced in various dimensions and shapes, e.g. hollow-interlocking blocks for disaster-resistant housing. This only requires a different mould in the same press. CSEB have a dimensional accuracy of 1mm, which reduces the required amount of mortar and plaster. CSEB lower construction cost by 25% compared to FCB.



CSEB production team in Bangladesh with Building Pioneers Founder Ava Mulla.



Set-up of CSEB press for production.

**Dear "competitor", please, please copy us! A bold approach served with bubbly start-up spirit.**

Building Pioneers is a social business start-up. Our mission is to create as much social and environmental impact as possible while being financially sustainable - not donation based or profit driven. We want to establish CSEB as a widely available alternative to FCB in all areas of Bangladesh. The sheer scale of the problem requires an unconventional approach that includes all relevant stakeholders including commercial companies, development agencies, government authorities, architects, builders etc. Building Pioneers does not have the capacity to replace 18 billion FCB by CSEB. But we have the skills and the drive to prove that CSEB is technically feasible and economically viable in Bangladesh. This will attract commercial companies (e.g. cement suppliers, brick kilns etc.) to enter into the market. Building Pioneers has successfully set-up a small-scale pilot production facility south of Dhaka with an enthusiastic production team, that appreciates the modern facility and good working conditions. This proof of concept allows us to approach the big players. The feedback from all the sides is overwhelming and promising. We are excited to set-up a large-scale production next year with a production capacity of several houses per day. ■

- **Ava Mulla**, Co-Founder, CEO,  
Building Pioneers UG, Germany

## URBAN RESILIENCE

# Urban Resilience: Three Ideas for Action

Given that cities and towns are the primary centers of human activity and development, efforts to strengthen urban resilience are critical. The role of cities rather than states in this age of rapid urbanization requires an urban focused approach for protecting against the various hazards and risks that urban populations face. Resilience in these contexts requires that the range of actors at the city level from individuals to households to communities and institutions (public and private) will have to individually and collectively engage with the hazards they face to cooperatively improve the factors that allow protection from these risks. This recognition means that new and innovative ideas will need to be developed, tested, scaled and adapted to various contexts. While the evidence base on effective practices to improve urban resilience remains thin, our collective experience and data is growing.

Three ideas for action now:

1. Develop and implement risk transfer mechanisms for the urban poor through disaster microinsurance. This will have multiple benefits. As an insurance system it can induce behavior change away from high risk areas and behavior using market forces or encourage disaster risk reduction measures to lower premium costs and risk. This idea can be implemented in the pre-disaster phase to promote long term recovery from day 1 of the crisis. Concern about cost feasibility and the covariate risk of pooling high risk clients together can be overcome with smart policies and facilities such as targeted insurance products and reinsurance. Microfinance has proven transformative when applied to groups typically excluded by traditional finance and this should be no exception.
2. Funding focused on high risk cities in the pre-disaster phase. Building resilience necessitates work before a crisis to improve the ability to recover. Humanitarian funding, however, is heavily weighted on the post-crisis part of the cycle. While funding cannot simply be shifted from post-crisis to pre-crisis and the need to fund acute crisis will remain, new funding needs to be prioritized towards the pre-crisis phase of the cycle. Starting with targeting high risk cities and high risk populations will provide and even greater return on investment.
3. Adopt resilience as an outcome and evaluation measure for humanitarian aid. Humanitarian response is unfortunately still heavily mired in evaluations that emphasise process measures rather than outcome measures. Pursuing outcome measures and beneficiary evaluations is vital. Unfortunately, the aid that follows a humanitarian crisis often does not help reduce the pre-existing risk that contributed to the crisis and in some cases even creates new risks in the pursuit of short term gains. A further shift in evaluations towards resilience as an outcome measure of aid intervention should be prioritized to ensure that the gains of humanitarian aid are not lost to continued risk. ■

- **Ronak B. Patel**, MD MPH, Stanford University