switchasia GRANTS PROGRAMME

Funded by the European Union

IMPACT SHEET: Promoting Sustainable Building in Bangladesh (SUSBUILD Bangladesh)

Resilience Through Construction

Promotion of Alternative Building Materials and Construction Technology to Ensure Sustainable Consumption and Production in Bangladesh

1 NO POVERTY

7 AFFORDABLE AND CLEAN ENERGY

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

CHALLENGE

In Bangladesh, brick-making is the largest source of greenhouse gas (GHG) emissions. The industry consumes 2.2 million tonnes of coal and 1.9 million tonnes of firewood and emits annually 8.75 million tonnes of greenhouse gas emissions. Existing data suggests that there are 6,637 brick kilns (as of June 2016, DoE), of which approximately double the number are run illegally. Almost all bricks are made using a 150 years old technology. Soil is mixed with water, formed into bricks using wooden forms, then left to dry in the sun before being burned in traditional kilns. Since majority of kilns are in clay, around 7,000 brick kilns in the country consume over 1.27 billion cubic feet of topsoil each year . The extensive use of clay accumulated from agricultural lands causes depletion of top soil and degradation of agriculture land. According to the Association for Land Reform and Development (ALRD), Bangladesh is experiencing 1% land loss each year. 17% is caused by brick kilns. Furthermore, over 4.78 million tonnes of coal and 1.9 million tonnes of firewood are consumed by the brick industry. The industry emits 8.75 million tonnes of greenhouse gas emissions annually and contributes to aggravated deforestation and depletion of valuable, non-renewable fossil resources. Efforts from the Government to combat pollution caused by brick kilns is reflected in the Brick Making and Kiln Establishment Act 2013. The Department of Environment banned traditional kilns and ordered their shutdown by June 2014 . Due to the lack of skilled workers, however, most brick kilns are yet to be converted into efficient technologies. Although various technology has been introduced to reduce GHG emissions, production of bricks still require burning and clay is still being used, doing little to reduce topsoil depletion, arable land degradation and loss of agricultural productivity.

PROJECT BACKGROUND

The EU SWITCH-Asia funded project "Promoting Sustainable Building Project" (SUSBUILD) was initiated to bring about transformative change in the brick industry in Bangladesh; not only switching to a cleaner brick manufacturing process, but also diversifying bricks production inputs in order to preserve natural resources, reduce GHG emissions and support the country's shift towards sustainable consumption and production patterns.

From 2016 to 2019, Oxfam in partnership with the Housing and Building Research Institute (HBRI), Bangladesh Environmental Lawyers Association (BELA) and Jagorani Chakra Foundation (JCF), have initiated action to generate market transformation for Alternative Bricks (AB) and other green construction materials.

With a total budget of € 2,000,000 (co-financed by EU SWITCH Asia and Oxfam GB), the project was implemented to promote Alternative Bricks (AB) amongst consumer and producer groups, and to test a model that may become a catalyst for sustainable consumption and production (SCP) practices within the construction sector, ensuring a favorable policy environment.

PROJECT OBJECTIVES

The overall objective of the SUSBUILD project was to promote sustainable and eco-friendly building practices in Bangladesh within an enabling policy environment.

The specific objectives sought to reduce the negative impacts brought by the fast developing construction, housing and building industry in Bangladesh, while protecting communities and the environment, and enabling policy change regarding the transition from unsustainable Traditional Bricks (TB) to sustainable Alternative Bricks (AB).

TARGET GROUPS

- **Consumer groups** including **technical experts** with potential technical capacity to adopt ABs through sustainable building design.
- **Bulk buyers** including **real estate companies** under the REHAB to improve linkages with suppliers of ABs at potentially lower costs.
- **Technical bodies** and **professional institutions** with a potential to create mass awareness and become the advocates for ABs.
- **Alternative building materials producer groups** and **traditional brick manufacturers** to facilitate transition to ABs, and thereby to ensure market demand for ABs.
- **Government duty bearers**, including different departments and authorities to develop adequate guidelines and standards for policies and effective mechanisms regarding environmentally friendly construction materials.

PROJECT ACTIVITIES

Increased awareness on use of green construction materials by consumer groups and adoption of sustainable building technologies.

The project supported a switch to more sustainable consumption patterns and behaviours in the construction sector, upscaling research and design of sustainable and cost-effective building materials, stimulating innovation by

integrating buyers and experts' perspectives in the design of materials and the use of ABs and other construction technology. It also influenced individual home owners; technical experts (masons, architects and engineers) with a key role in deciding design, materials and construction processes; intermediary business groups and bulk buyers (builders and real estate); government (public procurement) and INGOs and NGOs to purchase green building materials and adopt sustainable building practices.

Developing a viable business model for MSMEs for transition to production of green building materials.
With a focus on financial viability and risk mitigation, the project's research team identified three viable business models for ABs. Partnerships with MSMEs, suppliers, and financial institutions have been established to facilitate the uptake of alternative bricks manufacturing. 15 targeted MSMEs have signed MoUs to start producing alternative bricks.

Capacity building of technical experts on sustainable building.
Capacities of technical experts (masons, bar-binders, architects, civil engineers) have been strengthened on sustainable building design and construction, as well as alternative building materials. Government officers form relevant departments were also trained on the same topics and procedures, with the aim to include green materials in procurement guidelines for public works.

Strengthening policy and regulatory frameworks to promote and regulate green construction and public procurement.
Specific interventions have been undertaken to influence SCP policy frameworks to improve regulation of and endorse public procurement of green building materials and processes, including ABs and other technologies available on the market. The Alternative Building Technology Manufacturers & Entrepreneurs Forum was established to advance progress related to SCP policies and practices.

PROJECT ACHIEVEMENTS

- 9.8% of targeted consumer groups have reportedly used GC materials in the construction of their houses.
- 20% of users living in project sites now have a clear understanding of the benefits of employing green construction materials and 86% are willing to use Green Construction materials in the future.
- 7 traders at local level are selling three types of AB and Green Construction materials: Sand Cement Hollow Block, Interlocking Block and Pavement Block.
- 59% of technical experts in the project area have already used ABs in construction work.
- 3 business models for three types of blocks have been disseminated and 15 MoU signed with the brick kiln owners of Jashore and Savar.
- During the second year, recommendations have been submitted to the Government on the existing Brick Manufacturing and Brick Kiln Establishment (Control) Act, 2013. These were related to definition of brick, sourcing soil and permissions. The new parliament approved the recommendations on February 2019 and the new Brick Manufacturing and Brick Kiln Establishment (Control) Act, 2019 entered into force.
- More than 380 government officials, policy experts and executive magistrates have developed better understanding on the benefits of employing green construction materials and green technologies.
- The project was a catalyst for positive change in the Government's mindset (18 types of ABs were included in the Rate Schedule of the PWD and Abs were used in the Vhasanchar-Rohingya refugee camp project, among others).
- The Alternative Building Technology Manufacturers & Entrepreneurs' Forum was established.

LESSONS LEARNED

In proposing new alternatives to the thousand-years consumption pattern of clay bricks in Bangladesh, we have learnt that no single solution to the use of traditional bricks exists. A multitude of alternatives, materials and innovations must be taken into account. In addition, without sufficient direct financial support, small and medium scale investors will always be hesitant to invest in greener technologies due to the fluctuating market demand and supply.

The weak market signal, the need for high level investment, lack of incentives for brick manufacturers to switch to greener production, the constraints arising when importing machineries, high taxes, lack of raw materials, and weak regulatory frameworks, were identified as key challenges during project implementation.

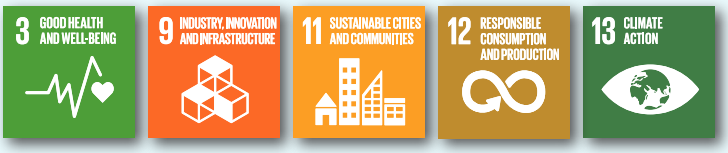
Anisur Rahman Chowdhury
Programme Coordinator, Oxfam

> 11 million wage earners consider a cosy home an important indicator of stability. The multi-stakeholder's Forum initiated under this project is working hard to bridge sustainable housing practices with the rising multibillion-dollar housing market. The changes we have seen at the policy level are already paving the way towards the path to green growth.

Long-term project sustainability

The **"Alternative Building Technology Manufacturers and Entrepreneurs' Forum (ABTEM)"** brings together relevant stakeholders from Bangladesh to market and promote alternative building technology. The Forum was created to increase awareness and outreach of SCP, widen the concept of the AB and sensitise consumers in Bangladesh. Through this initiative, linkages have been created between suppliers, financial institutions and technical resources for manufacturers have also been mobilised. Knowledge and information sharing, as well as best practices and expertise from multi-stakeholders, are crucial in ensuring the sustainability and scaling up of the project. The approval of the new Brick Manufacturing and Brick Kiln Establishment (Control) Act, 2019, which now clearly defines Alternative Bricks along with new rules on their mandatory use, clearly shows the Government's commitment to promote green construction materials and the importance of adopting SCP practices in the construction industry.

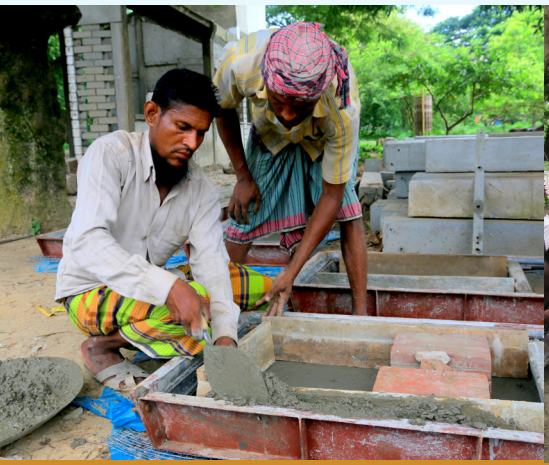
Project contributions to Climate Change Mitigation and SDGs



SUSTAINABLE DEVELOPMENT GOALS

Through the promotion of Alternative Bricks (ABs) and green construction practices, the project directly contributed to the achievement of SDG 12 by reducing the consumption of topsoil, along with the illegal use of firewood.

Through the introduction and adoption of green technologies, the project also contributed to the achievement of SDG 13: Climate Action (reducing greenhouse gas emissions); SDG 9: Industry, Innovation and Infrastructure (promoting resilient infrastructure and a cleaner construction process); SDG 11: Sustainable Cities and Communities (ensuring access for all to safe and affordable housing); and SDG 3: Good Health and Well-Being.



Impacts at a Glance

Economic Impact	• The project has identified 3 feasible business models for 3 types of Alternative Bricks (ABs) • New green products in the market: CSEB interlocking, CSEB and Sand Cement Hollow Block
Environ-mental Impact	• 15 targeted MSMEs extracted 10.25% more clay from river basin. This means a reduction in the consumption of topsoil use to produce traditional bricks.
Social Impact	• 90% of the population in the target areas has increased awareness regarding the quality, efficiency, and sustainability of alternative green building technologies compared to baseline.
Climate Benefits	• 2 MSMEs in targeted local areas are producing ABs with zero CHG gas emissions.
Green Finance	• 2 meeting organised with brick manufactures and different financing agencies to build relationships between and enable the brick field owners to understand the processes to access bank loans for green financing. • Engagement of financial institutions to improve access to finance for green building materials was also facilitated.
Target Group Engagement	• Partnership building with 15 MSMEs to start ABs production. 5 MSMEs are in the process of establishing factories to produce ABs. 1 MSME at Jashore has started producing Abs. • Technical support provided to 15 MSMEs. • Linkages facilitated among MSMEs, suppliers, and buyers of alternative bricks raw materials. • 77 interventions with MSMEs on transition to production of green building materials. • 69 batches of technical training sessions for 2029 technical experts (engineers, architects, urban planners, diploma engineers, students, masons)
Policy Development	• The new policy approved by the Government of Bangladesh bans all polluting and hazardous brick production systems, minimising air pollution and improving environmental health. • Types of policy changes/new regulations contributed to: Definition of Brick and Block, use of ABs in the construction sector, Production of ABs in brick kiln, banned the use of firewood in brick production, Banned the use of topsoil in the brick production, No need for approval and license by the local authority to produce ABs
Europe-Asia Cooperation	• PSBB Project Progress was presented in plenary and generated participants' interest on ABs at the SWITCH-Asia Programme II Launch and Regional Networking Event in Bangkok.

FUNDING

EUR 2,000,000
(EU Contribution: 90%)

DURATION

January 2016 - June 2019

PARTNERS

Oxfam

Housing and Building Research Institute (HBRI)

Bangladesh Environmental Lawyers Association (BELA)

Jagorani Chakra Foundation (JCF)

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