Press Release

Pakistan moves toward environmentally friendly and cost-effective brick kilns

Pakistan, which became a CCAC partner in December 2017, is working to reduce emissions from brick kilns

Paris, April 10, 2018: There are around 20,000 brick kilns in Pakistan. Many are located around urban areas and contribute significantly to air pollution. Pakistan's brick sector is highly unregulated and uncoordianted but is responsible for 1.5% of Pakistan's Gross Domestic Product.

Traditional brick production in Pakistan consists of hand-made bricks which are baked in Fixed Chimney Bull's Trench Kilns (FCBTK), the most widely used brick firing technology in South Asia. This is one of the most contaminating techniques for brick production, resulting in a host of social and environmental impacts including air pollution, climate change, cardio-respiratory diseases, land use impacts and deforestation.

The different kiln type and fuels burned, make it difficult to accurately identify the make-up of air polluntants emitted by the sector, but they likely include sulfur oxides, nitrogen dioxide, carbon monoxide, carbon dioxide (CO2), forms of particulate matter (PM) including black carbon, and additional compounds released by burning coal and other fuels.

Anyone who has ever seen a traditional brick kiln operating will have likely noticed billowing black smoke spewing from its chimney. Smoke that is breathed in by workers and nearby communities.

Brick kilns are recognized as one of the largest stationary sources of black carbon, and along with iron and steel production contributes 20% of total world-wide black carbon emissions. Black carbon (a major component of soot) is produced by the incomplete combustion of fossil fuel and biomass. It has a warming impact on climate 460 to 1500 times stronger than CO2. Its lifetime in the atmosphere varies from a few days to a few weeks.

When deposited on ice and snow, black carbon increases both atmospheric warming and increases the melting rate, and is a threat to Himalayan region. Retreating glaciers reduce dry-season water availability and increase the risk of glacial lake outburst floods, while increased climate variability and changes in rainfall and monsoon patterns could threaten regional water and food security as well as change the occurrence of landslides and floods. Changing temperatures and moisture availability also threaten rare or endangered species and ecosystems.

Reducing Emissions from Brick Kilns

Pakistan is a focus country for the project "Mitigating Black Carbon Emissions and Other Pollutans from Brick Production", which promotes and creates enabling environments that lead to substantial reductions of black carbon and other pollutants from brick kilns and aims to transform the sector into a healthier, socially responsible, more profitable industry.

The Environment Protection Department, Punjab (EPD, Punjab) and National Energy Effficient Conversation Authority (NEECA) is working closely with the All Bricks Kiln Owners Association of Pakistan to introduce environmentally friendly and cost-effective brick kiln technology. This is being facilitated by the International Centre for Integrated Mountain Development (ICIMOD).

Pakistan is working with the Climate and Clean Air Coalition (CCAC) and ICIMOD to train brick entrepreneurs and raise awareness of new increasingly cost effective and scalable kiln technologies and improvements in the brick production process.

This collaborative effort will help strengthen technical innovation among brick entrepreneurs and other actors in the sector capacity. Much of the training is based on the experiences and knowledge gained from Nepal's experience of rebuilding its brick industry after the 2015 earthquake.

To convince entrepreneurs to rebuild structurally sound kilns, the development of proper guidelines was necesarry. The Coalition supported the creation of a design manual for induced draught and natural draught zig-zag kilns.

In Nepal nine kilns were built following these designs and other kilns have adopted new brick stacking and firing techniques. Emissions from these kilns showed a 60% decrease in particulate matter and coal consumption was reduced by 40%. Only 70gm of coal is now needed to bake one brick compared to 90-100 gm previously. Due to increased fire efficiency, the number of bricks produced has also doubled and the number of 'A' grade bricks has increased by 90%. Workers also experience less exposure to dust and pollution.

Pakistan is learning from the Nepalese success story and brick kiln entrepreneurs from across Pakistan who want to transform their kilns into cleaner and energy efficient technology participated in training on Zig-Zag Firing Practices. This included a visit to Biratnagar, Nepal where they saw brick kilns built according to the new design manual, and theoretical and practial training sessions in Lahore and Islamabad.

The training programme aims to educate brick makers about:

- the shortcomings of existing technologies and practices and their impact on revenue, climate, agriculture and health
- the cost-effective technology solutions for cleaner brick production, its benefits and best operating practices
- cleaner brick firing practices, including pratical trainning for fire master on zig-zag kiln firing practices.

The training also provides a platform for participants to discuss issues and challenges and learn from the experiences of early adopters.

Since the training, two Pakistani brick kiln owners have adopted zig zag firing practices.

The All Bricks Kiln Owners Association of Pakistan have adopted the cleaner technology and Pakistan's Environment Protection Agency (Pak-EPA) and National Energy Efficiency Conservation Authority (NEECA), are looking at how internal resources can be mobilized to support the brick association in promoting adoption of cleaner technology kilns.

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