

## PRESS BRIEF

TARA and InnoCSR sign an MoU on research and promotion of low carbon Nano Joule Bricks

A big win for the construction sector, as the new brick innovation and research will mitigate carbon emissions.

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**New Delhi, 17 May 2024**

On Friday, May 17th, Technology and Action for Rural Advancement launched a Strategic Partnership on research and promotion of low carbon, non-fired Nano Joule Bricks.

The buildings and construction sector are by far the largest emitter of greenhouse gases, accounting for a staggering 37% of global emissions. One of the major construction materials used predominantly in Asia and Africa is fired clay bricks. With rapidly accelerating urbanization at an average rate of 6% per year this growth is driving increasing demand for bricks. Solid, fired clay bricks are amongst the most widely used building materials. According to a World Bank statement in 2020, approximately 1500 billion bricks are produced each year globally, of which 1,300 billion bricks (or 87%) are from Asia. Globally, brick kilns **release over 1,072 million tonnes of CO<sub>2</sub>** emissions annually, accounting for 2.7% of total emissions. Additionally, the industry consumes 375,000,000 tonnes of coal annually, alongside other highly polluting fuels. The environmental impact extends beyond production.

The situation in India is also similar to other Asian countries. A 200-300% increase in demand of bricks has been projected in India by 2030. This will significantly increase the country's current annual brick production of 250-300 billion bricks per year to 750-1,000 billion per annum. Brick sector in India is one of the largest industrial sources of CO<sub>2</sub>, responsible for global warming. About 66-84 million tonnes of CO<sub>2</sub> is generated from the brick sector annually. This industry has also been identified as the largest stationary source of atmospheric black carbon in South Asia contributing 100,000 tonnes every year. Therefore, it is necessary to continue research in this area to reduce the emission and improve efficiency, scalability, and affordability.

In association with InnoCSR, TARA introduced the “**Nano Joule Brick**” (NJB) powered by Good Bricks, InnoCSR's flagship technology of Nepal. NJB uses soil stabilizers to achieve desired properties in bricks. The soil stabilizers use mineral salts including sodium chloride and magnesium chloride to create a pozzolanic reaction, which break the chemical bonds of the organic matter in the soil mixture. They create an ionic bond effect that stiffens and consolidates the organic matter in soils. Cement and soil can then bind together and secure an optimal strength and other properties. Since it does not need any firing, this technology significantly reduces air pollution and increases the

productivity, delivering better quality bricks to the end consumers and higher profits to entrepreneurs.

TARA in association with InnoCSR, organised the launch of a strategic partnership focusing on research and promotion of low-carbon, non-fired Nano Joule Brick. The event, supported by SEED Division, Department of Science and Technology (DST), commenced with a welcome address by Shrashtant Patara, CEO of Development Alternatives, followed by a session on "Introduction to Green Brick Technology" by Sam Yoonsuk Lee, CEO of InnoCSR Co. Ltd. Lee who elaborated on the technology behind producing environmentally friendly bricks or low-carbon bricks.

QUOTES-

### **Sam Younsook Lee**

Our alliance with TARA and the introduction of Good Bricks in India marks a monumental step forward in our mission to foster sustainable industrial practices across Asia and globally. By adopting low-carbon brick manufacturing technologies, we are not only contributing to the environmental well-being but also creating substantial economic and social opportunities within the communities we operate in.

### **Dr. Soumen Maity**

India stands as the world's second-largest producer of bricks, currently manufacturing approximately 250-300 billion bricks annually. By 2030 or 2032, this figure is projected to soar to around 1000 billion bricks. Despite the availability of alternatives such as fly ash bricks and hollow concrete blocks, burnt clay bricks remain the preferred building material in the country, contributing significantly to industrial emissions.

However, the brick sector faces challenges due to the lack of technological advancements and processes. To address emissions, two key strategies emerge: enhancing the efficiency of Red Bricks through methods like Hollow Bricks, and exploring disruptive technologies for producing high-quality, non-fired bricks.

TARA is actively engaged in improving Red Brick efficiency while also collaborating with InnoCSR, a Malaysia-based company led by Sam Lee, to introduce innovative brick-making technologies in India. This endeavour aims to reduce reliance on fossil fuels, promote sustainability, and mitigate environmental impacts. By developing bricks that do not require coal and minimising fossil fuel usage, we aspire to contribute to cleaner air and skies.

### **Prof. Piyush Chaunsali**

Agricultural residues are often used by Indian MSMEs to meet their power requirements. In this process, significant biomass ash is generated and is often landfilled. We have successfully utilized Indian biomass ash in manufacturing eco-friendly bricks, thus reducing the environmental burden associated with its disposal.

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**About CO<sub>2</sub> & Construction Sector**- The Building and Construction sector significantly contributes to climate change. As per the 2022 Global Status Report for Buildings and Construction, buildings and construction sector accounted for about 21% of GHG emissions. As per the report released on November 9, 2022, at the COP27 at Sharm El-Sheikh, Egypt; in the year 2022 buildings were responsible for 34% global energy demand and 37% of energy and process-related carbon dioxide (CO<sub>2</sub>) emissions. This is equivalent to a 5% increase from 2020 levels, the highest after the pandemic. Out of this, energy consumed for building energy uses (e.g. heating, cooling, cooking, lighting, and equipment) was responsible for around 27% of global operational-related CO<sub>2</sub> emissions (10 GtCO<sub>2</sub>). The production of materials used in the construction of buildings, including steel, aluminium, concrete, glass, and brick, accounted for around 37% of global energy and process-related emissions.

India is also not far behind. The construction sector of India is also responsible for 39% of carbon emissions of the country. Out of these hard-to-abate building materials like steel, cement and bricks contributed to around 20%. The cement sector accounted for 5.6% to the total carbon emissions of the country. In keeping with the Honourable Prime Minister's commitment to achieve net-zero emissions by 2070, there is a need for radical transformation of the building and construction sector. While emphasis has been made on reducing operational energy of buildings, the embodied energy of the building materials being used, needs to be significantly reduced.

#### **About TARA**

TARA is a social enterprise set up in the year 1985 at New Delhi, India. It is an "incubation engine" of the Development Alternatives Group which has been providing development solutions in India and elsewhere. It is dedicated to sustainable development and is a research and action organisation striving to deliver socially equitable, environmentally sound, and economically scalable development outcomes.

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