Proceedings Document

Greening the Brick Sector in Bihar

29th June, 2018

Parivesh Bhawan, Patliputra, Patna

Organized by:

Bihar State Pollution Control Board
&
Development Alternatives

Supported by:

NSTEDB
National Science and Technology Entrepreneurship Development Board
Under the Department of Science and Technology

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Greening the Brick Sector in Bihar

With an overarching view of addressing diverse policy and practice issues, challenges, and transitions required for a green sector, Bihar State Pollution Control Board and Development Alternatives jointly initiated a workshop on 'Greening the Brick Sector in Bihar' on Friday, 29th June, 2018 at Seminar Hall, Parivesh Bhawan, Patliputra, Patna.

The workshop provided a platform and brought together various stakeholders from the government, civil society, academia and private sectors to create multi-stakeholder dialogue to promote fly ash bricks (FAB) in Bihar. The environmental impacts of the brick sector and the potential to mitigate these impacts through an inclusive economic strategy that supports economic growth needed to fuel development in the state was deliberated in the workshop. The workshop was structured with the following sessions:

- Inaugural session with a welcome address from Dr. Ashok Ghosh, Chairman, Bihar State Pollution Control Board (BSPCB)
- Presentation on Green Technology in Bihar
- Addressing Gaps in Policy, Practice, and Legislation to accelerate the Transition
- Levers of Change: Recommendations to take forward the Transition
- Closing session with a vote of thanks from Dr. K. Vijaya Lakshmi, Vice President, Development Alternatives

The discussions and dialogue focussed on the environmental impacts of the brick sector and the potential to mitigate these impacts through an inclusive economic strategy that supports economic growth needed to fuel development in the state. The dialogue also focused on the practical relevance of using fly ash bricks as an alternative to mitigate the environmental impacts of the brick sector otherwise since fly ash (a waste) as a raw material can contribute towards transitioning to a resource resilient India. The discussion also addressed the prevailing issues in the production and consumption of fly ash bricks.

The event witnessed participation from 58 participants from diverse groups including existing and potential fly ash entrepreneurs, regulators and policy makers, civil society, technology providers, builders and contractors, banks and fly ash associations. Many of the eminent speakers expressed their deep concern regarding fly ash utilization and the immediate need for developing a supportive ecosystem to promote fly ash bricks in Bihar.

The speakers were confident that the prime objective of promoting fly ash bricks in Bihar can be achieved through transformative action on technological, economic, regulatory and behavioural changes.

Sharp and thought-provoking speeches/ deliberations were made by the speakers at the workshop. The speakers included:

- Dr. Ashok Ghosh, Chairman, BSPCB
- Mr. Alok Kumar, Member Secretary, BSPCB
- Dr. Naveen Kumar, Assistant Scientific Officer, BSPCB

- Mr. K. P.S. Keshri, President, Bihar Industry Association
- Mr. Pankaj Kumar, Additional General Manager, National Thermal Power Corporation (NTPC)

- Mr. Stuart Worsley, Programme Director, Green Economy Coalition
- Dr. K. Vijaya Lakshmi, Vice President, Development Alternatives Group
- Dr. Sameer Maithel, Director, Greentech Knowledge Solutions Pvt. Ltd.
- Dr. Aparna Dhawan, Joint Director, National Accreditation Board for Certification Bodies (NABCB)
- Mr. Subodh Narayan Singh, Fly Ash Brick Entrepreneur
- Mr. Atul Goenka, Fly Ash Brick Entrepreneur
- Mr. Ravi Talwar, Fly Ash Brick Entrepreneur

Inaugural Session

The inaugural session began with an introductory remark by Dr. Naveen Kumar, BSPCB. He set the context by highlighting the need for cleaner technologies and the relevance to have a 'neutral technology', which saves both energy and other material resources.

Highlights of the Discussions at the Green Enterprise Mela

The half day event focused on mainstreaming greening of brick sector Bihar as a move towards resource efficiency while ensuring inclusive development in Bihar. This initiative was focused on developing mitigation action in the brick sector in Bihar, as brick sector is significant contributor to GHG emissions and has high environmental impact. It focused on the current status of brick sector in Bihar and the extensive list of parameters influencing demand and supply of fly ash bricks. All the deliberations that were made during this event could be categorized into three broad heads:

- Resource Security - Efficiency and Sufficiency
- Scope for Green Technologies in Bihar
- Policy Support and Suggestive Policy Action to Accelerate the Transition

Resource Security - Efficiency and Sufficiency

The first session set the context for the need for greening the brick sector in Bihar. Dr. Ashok Ghosh, Chairman, BSPCB, in the welcome address focused on the aspect of resource security while looking from the lens of efficiency and sufficiency. He initiated the discussion with highlighting his concerns about depleting top soil and its overall impact on the economy of Bihar. He emphasized on the fact that business as usual of red brick industry will hamper the economy of Bihar as Bihar is majorly an agricultural state and 10000 hectares of top soil is lost every year due to brick production and road construction. With business as usual, the agricultural output will be enormously hampered and will challenge the food production capacity of the state. The red brick industry poses multiple challenges including food security, air pollution, health concerns and the economic growth and wellbeing of the overall state of Bihar and therefore adequate measures should be taken.

Dr. Ashok Ghosh sharing his concerns on the top soil loss in Bihar

Dr. K. Vijaya Laksmi, Vice President, Development Alternative Group agreeing to the concerns raised by Dr. Ghosh, suggested considerable mitigation opportunities, including fly ash, vertical shaft kilns, zig zag technology, and retrofitting existing kilns for reduced fuel use. However, fly ash bricks is the most "conducive material", as it uses waste from the thermal power plants, reduces the burden on the top soil, and also reduces the GHG emissions. The use of alternative resource would also help the state and the country to achieve its Sustainable Development Goals (SDGs) as SDG 9, 11, 12 and 13 have direct linkages to the use of low resource intensive and carbon neutral technologies. She also highlighted that mere sustainable production might not be sufficient to bring environmental, social and economic benefits to the state, change in the consumption patterns are equally essential for a sustainable future. Accordingly, social movement to encourage demand for eco-friendly products will help bring a change in the consumption pattern.

Bihar has been a pioneer in terms in systematic action and follow-up; several initiatives have been taken including the establishment of a task force, a Fly Ash quality rating system, green enterprise mela, state consultations, capacity development, technology improvement, new technology and awareness. However, for Bihar to become low carbon state, multi-stakeholder engagement on a plausible action plan will be useful.

Scope for Green Technologies in Bihar

The second session focused on the scope of green technologies practiced in the brick sector in Bihar. Dr. Sameer Maithel, Director, Greentech Knowledge Solutions Pvt. Ltd. presented the case of up gradation of clay brick industry to low carbon technology. Dr. Maithel highlighted that the klin sector is the "largest small-scale sector in Bihar". There exist 6,000 – 7,000 kilns in Bihar with an annual production of 10,000 crores of bricks and providing employment to 15 lakh workers.

Dr. Maithel also indicated that brick klin is a principle cause of poor air quality, but this could be controlled as converting to a cleaner technology can potentially reduce the particulate and carbon emissions by 50% reduction of particulate and CO_2 emissions is possible with better technology. He highlighted that various awareness workshops and training programmes were conducted and expert visits were arranged to advice on alternatives in the recent past to support transition to cleaner technologies.

Dr. Sameer Maithel presenting the case of upgradation of clay bricks in Bihar

Dr. Maithel also pointed out that trained and certified kiln constructors, trained operators, the development of local industry (fans and other manufactured goods have to imported from other areas in India), assurance of stable environmental clearance for the future, and better technology are essential to transition to clean technology at scale. A long-term action policy that addresses a wider range of green brick technologies will be needed.

While Dr. Maithel spoke about the relatively cleaner technology, Mr. Vaibhav Rathi, Manager, Development Alternatives Group presented the case of fly ash bricks in Bihar. He highlighted that there are 136 (subject to the primary survey conducted by Development Alternatives in Bihar in 2018) fly ash brick enterprises in Bihar. He indicated that the policy environment is favourable in Bihar, but implementation is patchy. DA recommend a robust monitoring system including fly ash brick utilisation; sand quotas for fly ash brick making units; resolving cement availability (for the higher quality OPC); encourage district clustering of fly ash brick making units; campaigning for promotion and awareness of fly ash bricks; and bridging the information gap on availability and quality of fly ash bricks.

Policy Support and Suggestive Policy Action to Accelerate the Transition

The third session was organised more like an open discussion. While the concerns faced by fly ash entrepreneurs were presented to the participants, one of the primary demand side concern that was timely repeated was about the quality assurance of fly ash bricks. Responding to these concerns, Dr. Aparna Dhawan, Joint Director, Quality Council of India suggested following two options to the state of Bihar.

a) Notify standards by Law using BIS Act and BIS Standards – Certification can be by BIS or any other Conformity Assessment Procedure using NABCB accredited Conformity Assessment Bodies

b) Bihar State to make compliance to standards a part of its procurement policy and contract. This can be done by using BIS Certification or an Inspection Scheme where each lot supplied to the Government is inspected by NABCB accredited third party inspection body with testing in NABL accredited lab.

The workshop facilitated a fair discussion on the issues of demand and supply of fly ash bricks and also how policy actions and change in the current practices can potentially help promoting fly ash bricks in Bihar. Fly ash entrepreneurs jointly rose following concerns:

- Lack of availability of adequate quantity of OPC
- Lack of demand from the public sector
- Cost of transportation of fly ash reducing the market competitiveness of the fly ash brick entrepreneurs
- Periodical bans on sand mining is making fly ash brick manufacturing economically difficult
- Lack of knowledge on alternatives of sand

Open discussion on the concerns of fly ash entrepreneurs

These concerns were raised at various platforms including district level workshops and Green Enterprise Mela organised by Development Alternatives Group. The solutions for the issues raised at the workshop were identified and discussed. The representatives from various government departments including BSPCB; Department of Environment, Forest & Climate Change; Department of Building Construction; Department of MSMEs; Department of Rural Development; and building and road infrastructure based PSUs made various interventions.

The suggestions and the clarifications made at the workshop included:

- Replacement of OPC with PPC and increasing curing time while manufacturing fly ash bricks can overcome the concern of lack of availability of adequate quantity of OPC.
- BSPCB is willing to host a handbook on correct procedure of mixing techniques and other techniques related to manufacturing of fly ash bricks.
- BSPCB is willing to host the GIS based dashboard on fly ash brick manufacturing in Bihar on their website.
- BSPCB will raise the issue of poor implementation of notification of MoEFCC suggesting the transportation cost of fly ash to the fly ash enterprises located within 100 km of the thermal power plants will be borne by thermal power plants with National Thermal Power Corporation, Bihar.
- State authorities cannot regulate the allocation of fly ash as it has several uses including cement industry, road and construction etc. and regulating the allocation of fly ash towards competing uses will create market distortions.
- Lack of limestone locally available in Bihar restricts the fly ash entrepreneurs to the use of cement and therefore alternative to cement should be explored.
- NTPC suggested that bottom ash can potentially replace sand as it has similar chemical properties and this can help overcome the roadblocks due to lack of available sand or sand available at a higher price.
- BSPCB has some limitations with respect to the mandate and therefore they cannot make interventions in a free market space by creating artificial rates for any inputs required for making fly ash bricks. The issue of lack of adequate quantity of sand available at cheaper prices should be raised with the Department of Mines collectively by the fly ash brick association/ representatives.
- The government departments like Department of Rural Development who are responsible for developing affordable housing can offer enablement and awareness about the use of fly ash bricks, but cannot enforce the use fly ash bricks.
- Fly ash brick manufactures should avoid compromising with the quality of the bricks as this will impact the demand for these bricks in the long-run.
- Fly ash association should engage and partner with Bihar Industry Association as this can potentially further improve their business viability.
- Fly ash enterprises should collectively work on the branding of their products in order increase their market reach.

Conclusion

The response towards the workshop was overwhelming with government representatives, policy makers, banks and fly ash entrepreneurs actively participating in the sessions. The prevailing concerns of fly ash brick making industry were explained in a simple manner with business examples suggesting the applicability of these concepts to daily operations. A key highlight of the event was the understanding that the issue at hand is not just about demand and supply of bricks, but rather about the impact of the current practices on the environmental, social and economic wellbeing of the state of Bihar.

Next Steps in our journey to a Green Economy transition in India

Our GE journey will continue with series of initiatives in this direction.

We invite you to become a part of this journey alternatively through our website **Mapping Alternative Perspectives: South Asia (www.map-sa.net)** and help create a positive movement towards better people and planet outcomes in our country through dialogue creation and knowledge sharing.

Follow the transition on Twitter **@DAperspectives** or **#GEVoices**

Subscribe to our monthly newsletter, **MAPin**, on Green Economy transitions in India Here

Stay updated on Facebook @**DevaltOfficial**

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Annexure 1

Agenda

Time	Activity
10:00 – 10:30	**Tea and Registration**
10:30 – 10:50	**Opening Remarks** **Welcome Address** Chairman, Bihar State Pollution Control Board **Introductory Remarks** Vice President, Development Alternatives
10:50 – 11:20	**Presentation on Green technology in Bihar** • Greentech Pvt. Ltd.- Case of Zigzag technology at Patna • Development Alternatives- Case of Fly Ash Bricks in Bihar
11:20– 12:30	**Roundtable Discussion** **Addressing Gaps in Policy, Practice, and Legislation to accelerate the Transition** • National Thermal Power Corporation • Department of Building Construction • State PSUs • Department of Industry • Department of Urban Development & Housing • Department of Mines • State Banking Committee/ State Bank of India • MSME Development Institute, Patna • Quality Council of India • Bihar State Pollution Control Board- **Chair**
12:30 – 13:40	**Roundtable Discussion** **Levers of Change: Recommendations to take forward the Transition** • Bihar Industry Association • National/ Bihar Fly ash Association • CREDAI Group, Patna • Fly Ash Entrepreneur • Centre for Science & Environment • Asian Development Research Institute • Department of Building Construction • Development Alternatives - **Chair**
13:40 – 14:00	**Special Address** Member Secretary, Bihar State Pollution Control Board **Vote of Thanks** Development Alternatives

Annexure 2

List of Participants

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Annexure 3

Media Coverage

'Clay brick kilns ruining 10k hectare fertile top soil'

Nandini
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THIS IS ALSO ADVERSELY AFFECTING PRODUCTION OF GRAINS IN BIHAR

PATNA: The top soil used in making clay bricks is ruining around 10,000 hectares of fertile top soil land. This is also adversely affecting the production of grains in Bihar, said the chairman of Bihar State Pollution Control Board (BSPCB), Ashok Ghosh, at a workshop organised jointly by BSPCB and Development Alternatives on 'Greening the brick sector in Bihar' here on Friday.

"With the use of fly ash technique, this problem can be solved. Out of the total energy production in the country, 73% is produced by thermal power plants in which coal is the main fuel.

Due to this, around 4 to 11 crore tonne of fly ash is produced.

But, only 14% fly ash is used here. There is need to promote the use of fly ash technique," he added.

On the occasion, K Vijaylakshmi, vice chairman of Development Alternative, Samir Maitil of Greentech Private Limited and others were present.

Workers busy at a clay brick kiln. HT FILE

Hindustan Times Patna, 30th June, 2018

ईंट में इस्तेमाल होनेवाली मिट्टी से कृषि प्रभावित

पटना (आससे)। मिट्टी से बनायी जाने वाली ईंटों में प्रधानतया कृषि योग्य उपजाउ उपरी मृदा का उपयोग किया जाता है। ऐसी मृदा के उपयोग से कृषि प्रधान बिहार राज्य में आने वाले दिनों में कृषि उपज पर विपरीत प्रभाव पड़ने की आशंका है। उक्त बातें बिहार राज्य प्रदूषण नियंत्रण पर्षद एवं डेवलपमेंट

अल्टरनेटिव्स के सहयोग से आयोजित कार्यशाला के दौरान पर्षद अध्यक्ष डा अशोक कुमार घोष ने कही। उन्होंने कहा कि देश में कुल उर्जा उत्पादन का 73 प्रतिशत थर्मल पावर प्लांटों द्वारा उत्पादित किया जाता है। इस प्रक्रिया में ईंधन के रुप में कोयला का उपयोग किया जाता है जिससे करीब 4 से 11 करोड़ टन फ्लाई ऐश उत्पादन होता है जिसका निष्पादन एक बड़ी समस्या है। अभी कुल फ्लाई ऐश का करीब 14 प्रतिशत ही उपयोग किया जा रहा है।

डा घोष ने बताया कि ईंट निर्माण में करीब 10 हजार हेक्टेयर उपजाउ उपरी मृदा को हम प्रतिवर्ष खो रहे हैं जो भोज्य अनाजों के उत्पादन को कुप्रभावित कर रहा है। थर्मल पावर प्लांटों से उत्पन्न फ्लाई ऐश से स्वास्थ्य की समस्याएं भी जुड़ी हुयी है। पर्षद के सहायक वैज्ञानिक पदाधिकारी डा नवीन कुमार ने बताया कि ईंट निर्माण इकाईयों में न्यून कार्बन उत्सर्जन के लिए प्रयास प्रारंभ करने वाला बिहार देश का पहला राज्य बना जब लो कार्बन पाथवे के लिए राज्य सरकार द्वारा टास्क फोर्स का गठन किया गया है। राजधानी पटना के निकट के 5 ब्लाकों के करीब 120 ईंट भठ्ठों द्वारा अपने ईंट निर्माण तकनीक को स्वच्छतर तकनीक में परिवर्तित कर लिया गया है। ईंट निर्माण में फ्लाई ऐश का उपयोग तथा फ्लाई ऐश ईंट निर्माण को प्रोत्साहित करने का प्रयास किया गया है। डेवलपमेंट अल्टरनेटिव्स की उपाध्यक्ष के विजयलक्ष्मी ने बताया कि फ्लाई ऐश का निष्पादन एक बड़ी समस्या है। राज्य के बड़े उपभोक्ताओं को मिटटी से बनी ईंट के बदले फ्लाई ऐश से बनी ईंट के उपयोग को बढ़ाना चाहिए। ईंट निर्माण की उपलब्ध तकनीक का लगातार उन्नयन कर स्वच्छतर तकनीक में बदला जा रहा है ताकि पर्यावरण का संरक्षण को सके। ग्रीनटेक प्रा लिमिटेड के डा समीर मैतील ने बताया कि वर्तमान में राज्य में 20 अरब ईंटों की आवश्यकता है जो भविष्य में 50 अरब तक पहुंचने का अनुमान है। इतनी बड़ी मात्रा में ईंटों की पूर्ति केवल मिटटी से बनी ईंटों से नहीं हो सकती है। इस कार्यशाला में एनटीपीसी, ग्रामीण विकास विभाग, पर्यावरण एवं वन विभाग, बिहार अर्बन इन्फ्रास्ट्रक्चर डेवलपमेंट कारपोरेशन लिमिटेड, बिहार मेडिकल सर्विसेज एंड इन्फ्रास्ट्रक्चर कारपोरेशन लिमिटेड के प्रतिनिधियों ने भाग लिया।

Aa Patnaj, 30th June, 2018