

FACT SHEET

Brick sector in Pakistan



Sector overview

Number of brick kilns (2018 ¹)	18,000–20,000
Annual brick production (2018)	82.5 billion bricks ²
Annual domestic consumption	90% of production bricks
Annual brick demand	112 billion bricks
Animals utilized (2017)	115,000 animals ³
Number employed (2018)	1.3 million people
Men employed	77% men
Women employed	23% women
Admin and others	60,000 people
Moulding	9,00,000 people
GB transport	150,000 people
Firing	1,00,000 people
Fired brick transport	120,000 people
Sector investment (2018)	PKRs 240 billion ⁴ / USD 2 billion
Value of sales (2018)	PKRs 676.512 billion/USD 5.637 billion
GDP contribution	Not available
Tax contribution	No sales tax; taxation on coal and income
Estimated avg. coal consumption for firing bricks per annum (2018)	13 million tons ⁵ 60–70% of total fuel consumption by brick sector
Annual coal expenses (2018)	PKRs 179 billion/USD 1.49 billion
Other fuel consumption	Common biomass fuel – rice husk, cotton stalk, sawdust, biomass residue, baggase. About 30–40% of total fuel consumed by brick kilns. In some areas, bricks kilns exclusively use biomass fuel. Cost of biomass fuel varies between PKRs 6–10 per kg.

¹Data/information from 2018 is gathered through an interview with APBKOA in 2018

²About 80% of the bricks are produced by the indigenous Fixed Chimney Bull's Trench Kilns (FCBTK).

³Brick by Brick – Environment, Human Labour and Animal Welfare, Unveiling the full picture of South Asia's brick kiln industry and building the blocks for change, ILO/Brooke/The Donkey Sanctuary, 2017

⁴Exchange rate of PKRs 120 to USD 1 on September 30, 2018.

⁵Calculated based on discussion with APBKOA, 2018. Assumption - 70% of energy needs is fulfilled by coal and 30% by biomass



Policy overview

EXISTING POLICIES

- Constitution of Pakistan
- Environment Protection ACT 1997
- National Environmental Quality Standards
- Punjab Environmental Quality Standards for Industrial Gaseous Emissions
- National Climate Change Policy 2012
- Framework for Implementation of Climate Change Policy 2013
- National Energy Efficiency and Conservation Act 2016
- Pakistan Vision 2025
- National Energy Conservation Policy 2006
- Bonded Labour (Abolition) Act 1992
- Bonded Labour (Abolition) Rules 1995
- Employment of Children Act 1991
- Employment of Children Rules 1995
- Children (Pledging of Labour) Act 1933
- Compulsory Education Act
- Minimum Wages Ordinance 1961
- Employees Social Security Ordinance 1965

- Employees Old Age Benefit Act 1976
- Industrial Relations Ordinance 2002
- Factory Act 1934
- National Environmental Quality Standards 2000

POLICIES SPECIFIC TO THE BRICK SECTOR

- The Punjab Prohibition of Child Labour at Brick Kilns Act 2016
- The Environment Protection Department of Punjab issued a notification that zig-zag firing (induced) technology brick kilns will be allowed and construction of old conventional technology shall not be allowed.
- The Ministry of Climate Change, Government of Pakistan, decided to restrict new brick kilns with old technologies and extended support to build zig-zig kilns.



Technology

Technology	Number (kilns with coal as the primary fuel)	Energy consumption (tons)	Number employed
Fixed Chimney Bull's Trench Kils (FCBTK) (natural draft)	15,000	13 million tons of coal (excluding biomass)	1.3 million
FCBTK (forced/induced draft)			
Zig-zag FCBTK (natural draft)	150	0.0945 million tons of coal	45,000
Zig-zag FCBTK (forced/induced draft)			
VSBK	NA		
Hoffmann kiln	1		



Emissions and the environment

- The Ministry of Climate Change suggested EPAs to issue guidelines for the conversion of FCBTKs to reduce emissions and conserve energy.
- The IEE and EIA Regulations (2000) require environmental approval from federal or provincial agencies for all projects. However brick kilns are not listed as required projects. Provincial EPAs are updating their database about brick kilns.
- National Environmental Quality Standards (2000) (NEQS) specify maximum allowable concentration of 16 parameters (pollutants) in gaseous emissions from industrial sources. PM emission limit in NEQS for coal-fired industries has been set at 500mg/cum. However, the emission standard has not yet been enforced in the brick sector.

- The Government of Punjab has issued a notification to ban the construction of conventional brick kilns technology and to allow construction of zig-zag firing (induced) brick kiln technology only.
- Similarly, to address smog issues in Punjab, the government banned the operation of old technologies from 20 October 2018 to 31 December 2018.
- Another notice issued under Section 6(1)(m), EPA (1997) by EPD Punjab to brick kiln owners notifies the ban in operation of conventional brick firing technologies from 2019 onwards.
- Also, brick kiln owners are required to take approval for construction of new kiln. As per the Punjab Environment Protection Act (1997), revised in 2012, EPAs can take legal actions and seal brick kilns operated without permission. However, these provisions are being implemented after the introduction of zig-zag kilns as per brick associations and is also becoming a hindrance during the transition phase.
- Zig-zag kilns have been given significant importance in context of National Determined Contributions and made part of the National Action Plan for SE4ALL.

Labour and working conditions

- The Provincial Government of Punjab declared in 2012 an Education Emergency in the province that required the enrolment of out-of-school children belonging to families engaged at brick kilns, including child workers. This initiative implemented the 2010 constitutional amendment that added a right to education provision (Article 25A) in the Constitution of Pakistan⁷.
- A report published by Rahman et al. (2012) estimated that 250,000 children aged 14–18 years work in brick kilns⁸.
- The Factory Act Article (1997) has different provisions to ensure the health, safety, and wellbeing of factory workers, but there are no comprehensive occupational health and safety laws specific to brick kiln workers⁹.

⁷Ayesha Aftab. (2016). Rights of Bonded Laborers at Brick Kilns: A Social Protection Perspective from Pakistan, <https://www.hurights.or.jp/archives/asiapacific/section1/6%20Rights%20of%20Bonded%20Laborers%20at%20Brick%20Kilns.pdf>

⁸Rahman et al, 2012, Status of Occupational Health and Safety in Brick Kiln Industries at Hatter Industrial Estate Haripur, Pakistan, https://www.scientific-journals.co.uk/web_documents/4010209_health_safety__brick__industries.pdf

⁹Rahman et al, 2012, Status of Occupational Health and Safety in Brick Kiln Industries at Hatter Industrial Estate Haripur, Pakistan, https://www.scientific-journals.co.uk/web_documents/4010209_health_safety__brick__industries.pdf



Industry promotion, monitoring, and enforcement

- The brick sector in Pakistan is an informal sector, unregulated and not even recognized as a cottage industry.
- Brick kilns are not formally registered in any government institutions, though EPD Punjab has issued a notice to acquire an NOC for brick kiln owners.
- The Pakistan Standard and Quality Control Authority (PSQCA), Pakistan Council of Scientific & Industrial Research (PCSIR), Environmental Protection Authority (EPA), and other public sector organizations have issued standards and quality control statutes for products and industries, but none of them have framed kiln specific standards.
- There is no clear provision or guideline for taxation pertaining to brick kiln sector and these do not directly fall into the tax regime.
- Representative bodies – All Pakistan Brick Kiln Owners Association (APBKOA) and provincial level associations of brick kiln owners

Good practices

Technology

In partnership among APBKOA, Ministry of Climate Change Pakistan, ICIMOD/CCAC, and NECCA, the zig-zag brick firing technology was transferred to Pakistan from Nepal in 2017. In the span of one year, 150 brick kilns have already adopted the zig-zag firing technology and many more will follow. The Punjab government's decision to ban conventional kilns and allow the operation of zig-zag technology from 2019 can pave the way for mass dissemination of zig-zag brick firing technology in Pakistan.

Issues and opportunities

Technology

- Policies promoting conversion to zig-zag technology can potentially save 6 million tons of coal valued at about PKRs 96 billion. The investment to convert remaining FCBTKs amounts to around PKRs 40 billion.
- A huge number of firemasters, green brick stackers, and technicians have to be capacitated to convert existing FCBTKs to the zig-zag technology. This

demands an efficient and effective technical assistant component along with an enabling policy environment to support brick owners.

- It is necessary to provide technical support for energy conservation measures such as the availability of a green brick-making manual, guidelines on efficient firing techniques, modified kiln designs, construction drawings and technical trouble shooting checklist, portable analyzers, and other associated gadgets.
- The technology optimization or transfer should take account of local conditions, availability, and adaptability. Improvement in green brick-making practices and procedures such as soil selection, its seasoning, internal fuel mixing, maturing, and ensuring optimal moisture content at the time of brick loading into the kiln are some of the small-scale energy conservation actions at kiln units that can substantially save energy consumption. Similarly, appropriate quality, quantity, and size of coal stoking along with fire monitoring can enhance firing efficiency.

Emissions and the environment

- Formulate and enforce standards that meet environmental and labour requirements. Statutes specific to brick kilns, establishing baseline standards on quality, energy efficient kiln designs, and emissions need to be promulgated.
- Review and prepare uniform emission standard for all brick firing technologies to replace technology specific emission standard. Define time-bound emission targets for brick kilns to provide a direction as well as sufficient time for future improvement.
- Carry out baseline study including capacity assessment of brick kilns, before promulgating new standards. Establish necessary support mechanism for compliance with proposed standards.
- Prepare a standardized monitoring protocol to measure emissions from brick kilns, taking into account monitoring methodology, standardization of equipment, and duration.
- Make energy audits mandatory (under the National Energy Efficiency & Conservation Act 2016), and if it is provisioned to be done by kiln owners, it would be more effective to sustain efficiency.
- Need to formulate uniform regulation and standards for brick industry across all provinces.
- Studies on dust emissions can provide valuable data and literature particularly on Pakistan to analyse health impact and contribute to reviewing and revising the environment law.

- Use of multiple fuel sources such as husk and agri and poultry waste with proper mix ratio can contribute to reducing local environmental degradation caused by such waste.

Labour and working conditions

- Legislation specific to brick sector for labour and social security should be developed.
- The education and development of children accompanying their family in brick kilns has to be ensured through integration of incentive-based education and vocational training.
- Trades specific to brick kilns, such as kiln supervisor, master moulder, fire master, and extruder operator, can be introduced at district trade training schools. Workers can be trained on the science-based curriculum by technical and vocational institutes.
- Non-formal literacy and skill training centres should be operated including on brick making technologies.

Industry promotion, monitoring, and enforcement

- Recognize the brick sector as a formal industrial sector. Develop brick-sector specific consolidated guidelines referring to provisions in all the policies (Acts, Rules and Regulations). Institute a procedure to periodically review and revise the guidelines to be aligned with the context.
- Introduce online registration of new kilns that satisfy environmental, labour and quality standards. Establish database to develop the sector with R&D and technology transfer programs under a central coordinating and implementing authority.
- Develop dedicated brick manufacturing zones/ clusters along with land use planning. Allow new brick kilns to be operated within the dedicated zone with preferential procedures of IEE/EIA of brick zone instead of individual brick kilns.
- Prepare guidelines to take actions against kilns that do not achieve emission standards within a timeframe for improvement.
- Upon recognizing the brick sector as a formal sector, the sector can access finance through organizations such as Small and Medium Enterprise Development Authority (SMEDA) and Small and Medium Enterprise Bank (SME Bank).

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ICIMOD gratefully acknowledges the support of its core donors: the Governments of Afghanistan, Australia, Austria, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Sweden, and Switzerland.