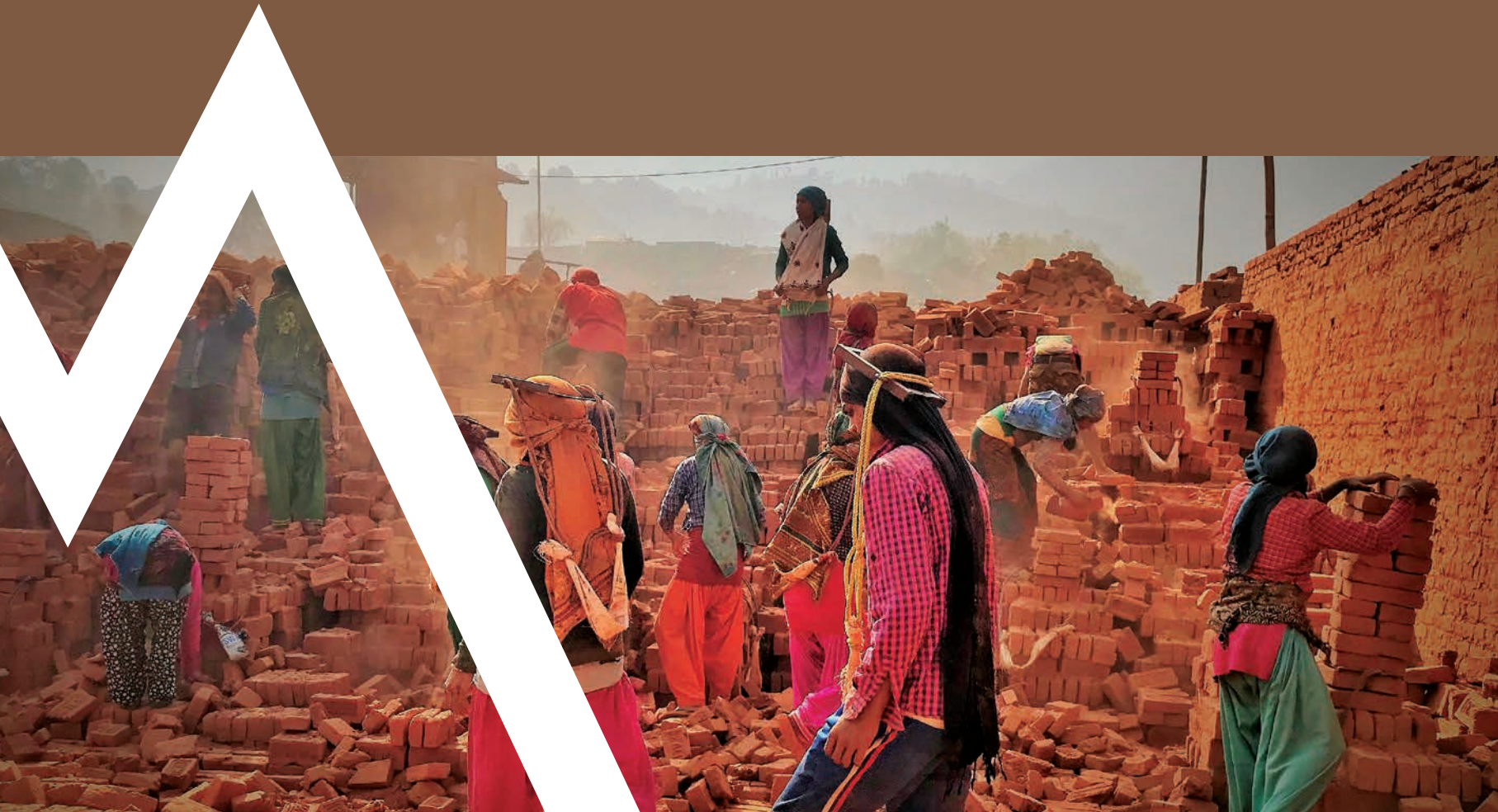


ICIMOD

BRICK INITIATIVE

# Towards an environmentally just and socially equitable brick industry in South Asia

An overview of ICIMOD's interventions in the brick sector



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# **Towards an environmentally just and socially equitable brick industry in South Asia**

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## Background

Bricks are the most widely used building material in South Asia. There are about 150,000 brick kilns in the region, producing around 310 billion bricks annually. Most of these kilns are traditional and produce hand-moulded bricks through very labour- and energy-intensive processes. In Nepal, about 1,300 of such traditional brick kilns emit an estimated 1,200 tonnes of black carbon (BC) and 1.3 million tonnes of carbon dioxide per year.

Inefficient combustion in traditional kilns results in high levels of emissions that not only affect local environment and communities but also gradually impact regional air quality that ultimately contributes to the melting of glaciers. Brick production is also one of the major sources of carbon dioxide, BC, and other short-lived climate pollutants such as particulate matter and sulphur dioxide. The impact of BC can be up to 1,500 times more damaging to our climate than carbon dioxide emissions and is a significant contributor to global warming and detrimental to public health. It is telling that the United Nations Environment Programme and Climate and Clean Air Coalition's (CCAC) Air Pollution in Asia and the Pacific: Science-based Solutions (2019) report identifies the brick sector as one of 25 areas that governments can address to rapidly reduce air pollution

Inefficient combustion in traditional kilns results in high levels of emissions that not only affect local environment and communities but also gradually impact regional air quality, contributing to the melting of glaciers.



About  
**150,000**  
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Around  
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annually



Around  
**1.3 million**  
tonnes of  
carbon dioxide  
emissions  
annually





## ICIMOD's approach

A clean brick sector is characterized by lower emissions, energy-efficient technologies, and good working conditions free of child labour. Accordingly, the International Centre for Integrated Mountain Development (ICIMOD) has been working since 2013 to improve air quality by reducing BC and other emissions from brick kilns through technological, social, and policy interventions. It has been promoting the adoption of best practices and solutions – piloting the integration of socioeconomic, gender, and equity perspectives – to make the South Asian brick sector cleaner, socially equitable, and more sustainable.

The zig-zag technology being promoted by ICIMOD reduces coal consumption by 20% and produces cost-efficient, better-quality bricks with significantly lower emissions. The technology has gained popularity among brick kiln owners in South Asian countries such as Bangladesh, India, and Pakistan.

From a social impact perspective, ICIMOD achieved a vital breakthrough in Nepal when it successfully intervened to bring awareness among brick entrepreneurs that the social and gender aspects of production are as important as the adoption of efficient technologies, thereby enabling collaborative gender and social action research interventions in factories.



ICIMOD has introduced technical improvements and innovations in brick production processes, such as the substitution of coal with biomass pellets, replacement of firewood with liquefied petroleum gas in the initial firing process, and mechanization of various processes.



**Zig-zag brick kiln  
technology reduces coal  
consumption by  
20%**





## Intervention strategy

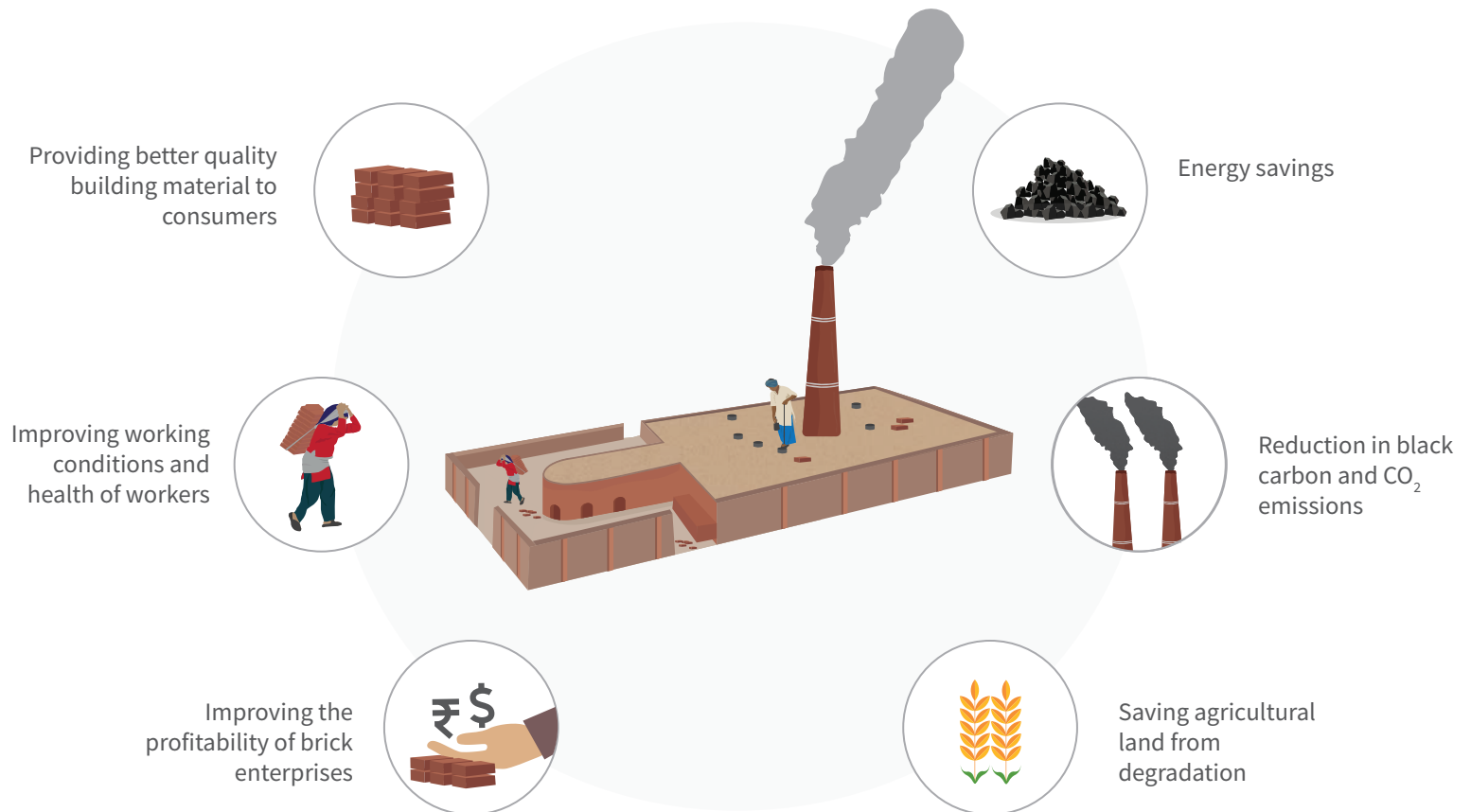
ICIMOD works to transform the brick sector in Bangladesh, India, Nepal, and Pakistan by:

- Accelerating the adoption of cleaner brick-making technologies in collaboration with entrepreneurs and policymakers
- Facilitating policymakers to develop a regulatory framework acceptable to both producers and consumers
- Improving local technical capacity in the design, manufacture, mechanization, efficient operation, and maintenance of energy-efficient brick kilns
- Limiting the direct exposure of workers to harmful emissions by improving the working conditions in collaboration with related private sector stakeholders

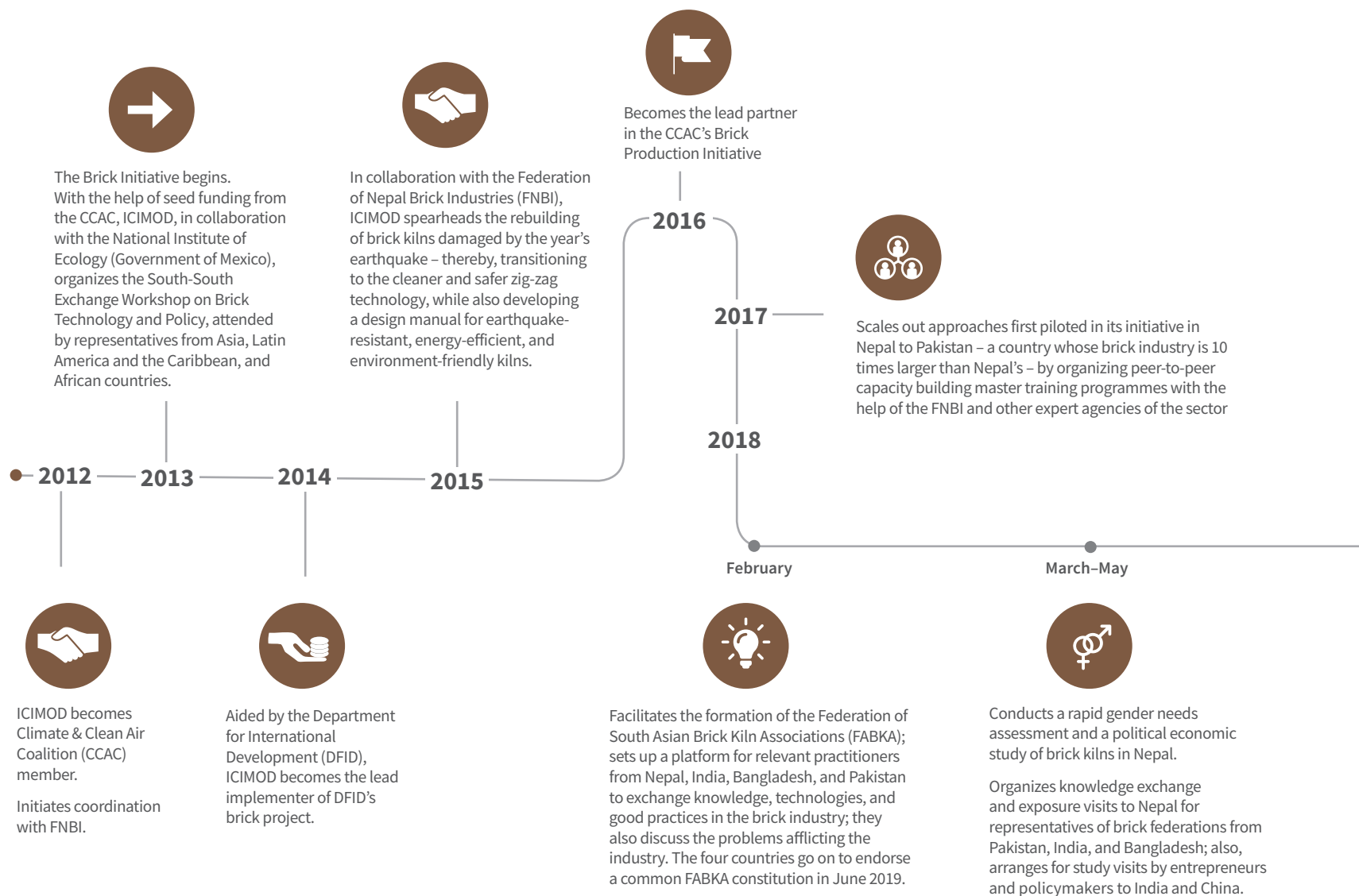


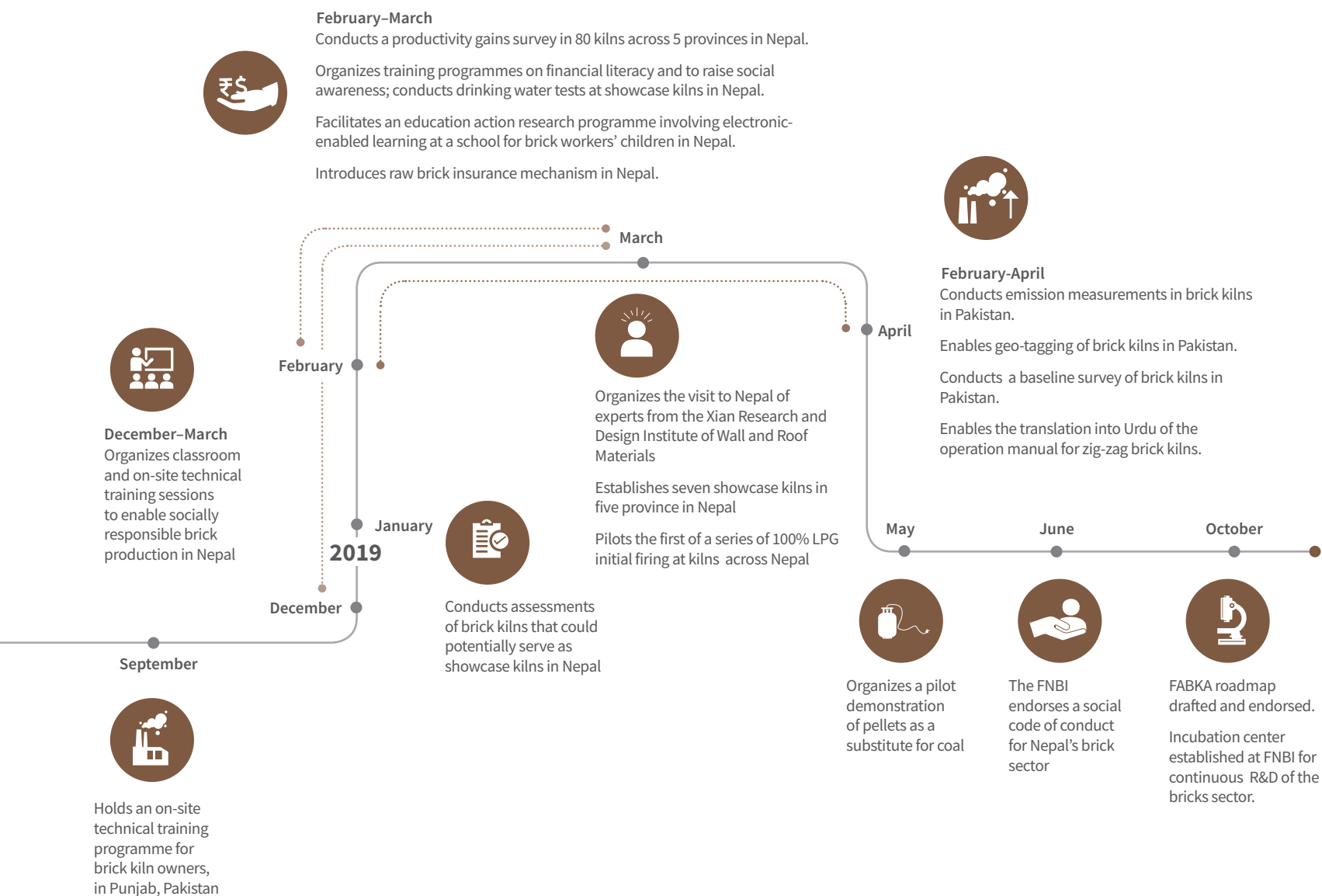
# Why zig-zag kilns?

Zig-zag kilns increase social and economic benefits for businesses and communities, as well as reduce emissions and health impacts



# Timeline of ICIMOD's interventions in the brick sector







# What we do



## Capacity building

- Conversion from fixed chimney bull's trench kilns to zig-zag kilns.
- Emission measurement in brick kilns in South Asia.
- Training of brick entrepreneurs and workers from Bangladesh, India, Nepal, and Pakistan.
- Training of engineers on the construction of zig-zag kilns.
- Establishment of an incubation centre and laboratory by FNBI.



## Building scientific knowledge

- Generating data related to energy and emissions in South Asia.
- Product design/redesign by engineering students.
- Responding to data gaps in the social aspects of brick production



## Catalysing policies

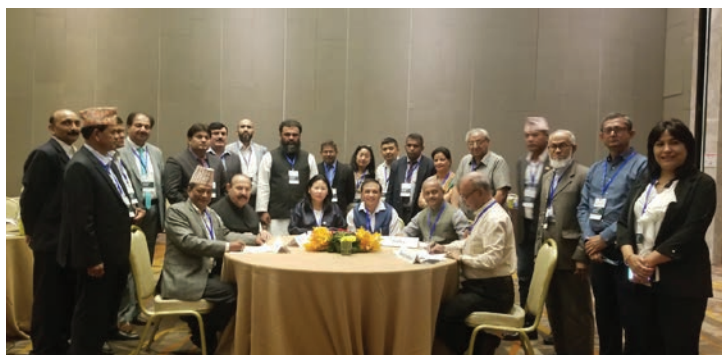
- Revision of brick kiln emission standards in Nepal.
- A Punjab government directive of 2018 banned the operation of traditional kilns in Pakistan during winter, when thick haze envelops its cities.
- Coordinating with the Central Pollution Control Board of India for further modernization of the brick sector in India with immediate focus on the National Capital Region (NCR).
- Easy loans to brick owners at 6% interest rate issued by the State Bank of Pakistan
- The Technical Education and Vocational Training Authority (TEVTA) of Pakistan has prepared a syllabus on brick making. A training centre for the same has been proposed.





# Scaling up and regional platforms

The Federation of Asian Brick Kiln Associations (FABKA) was established in 2018 with representation of brick associations of Bangladesh, India, Nepal, and Pakistan. FABKA members are: Federation of Nepal Brick Industries (FNBI), All India Brick and Tile Manufacturers Federation (AIBTMF), Bangladesh Brick Manufacturing Owners Association (BBMOA), and Brick Kiln Owners' Association of Pakistan (BKOAP). FABKA aims to promote the exchange of knowledge, technologies, and good practices; enhance cooperation; engage in policy advocacy; and foster collaboration with related stakeholders in the South Asian region. Following the ratification of the FABKA constitution by brick kiln association presidents of member countries, the FABKA Secretariat has been established in Kathmandu. Members have developed and endorsed a draft roadmap, highlighting FABKA's future as an independent legal entity. FABKA works as a collective platform for brick makers in South Asia to share and exchange knowledge, technologies, and good practices related to the brick industry.



## Introducing innovations

- Transfer of technical skills to construct and operate better zig-zag brick production units.
- Exposure visits to China and India for brick entrepreneurs from Bangladesh, Nepal, and India to learn about the various mechanization options and cleaner production technologies such as the tunnel kiln technology.
- Shift to LPG-enabled initial brick firing in Nepal from fuelwood firing, thereby reducing the cost of fuelwood, easing operation, and helping attain the coal ignition temperature faster.



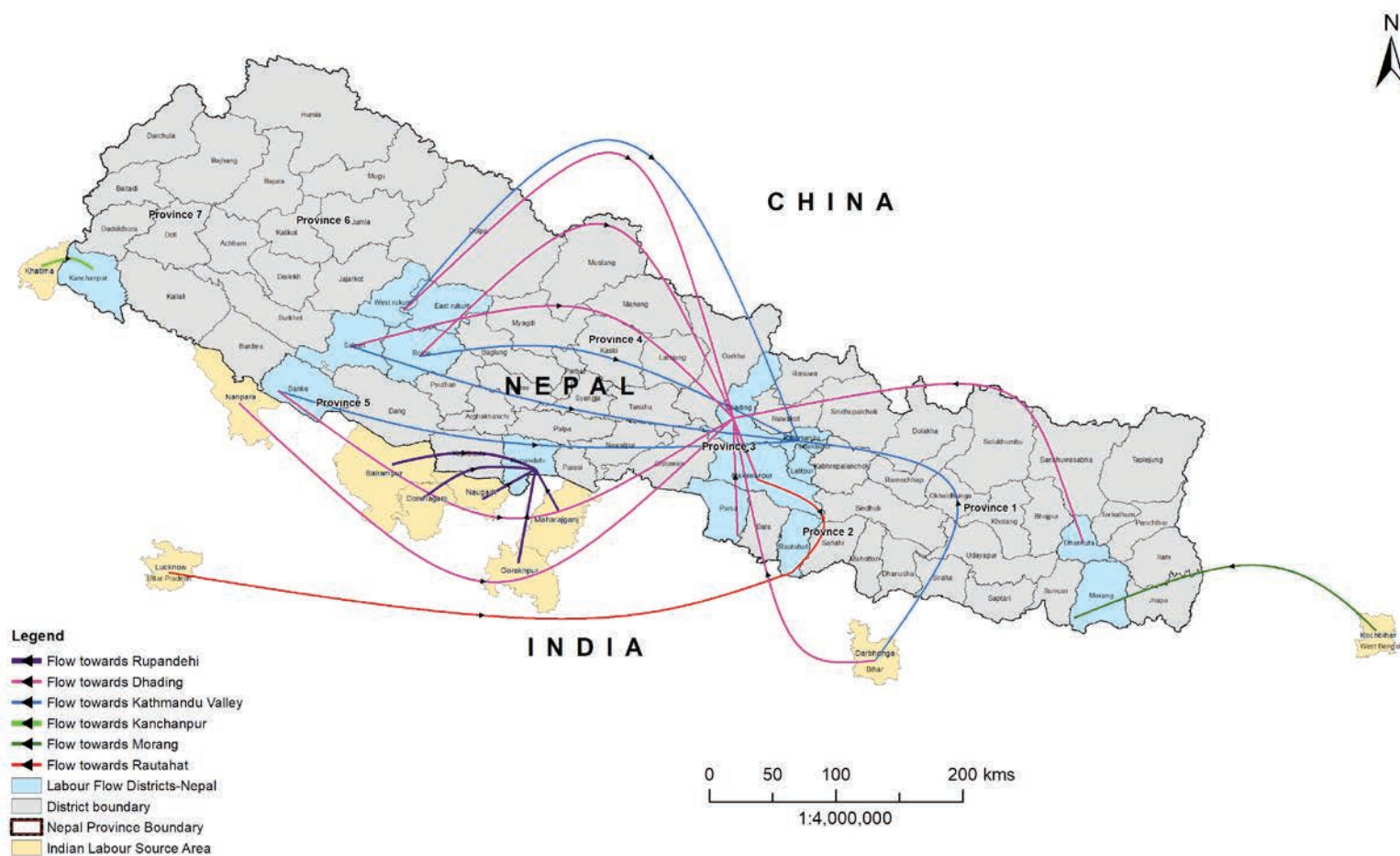




## Socially responsible brick production

- Action research showing how improved working conditions can lead to enhanced productivity and enable benefits for all.
- Focus on health, safety in the workplace, and education for workers' children.
- Helping male and female brick workers in Nepal overcome social vulnerabilities.
- Establishment of a social cell within the FNBI to integrate socially responsible brick production practices nationwide.
- Development of a brick sector code of conduct and standard operating procedures for the FNBI.
- A productivity gains survey of 80 kilns across Nepal to explore linkages between better working conditions and enhanced productivity.
- Financial literacy and occupational health and safety (OHS) trainings for 140 workers and their spouses to help manage limited financial resources and adapt to uncertainty.
- ICT-enabled teaching at a government school to help the children of brick workers broaden their horizons.

# The social component of brick production



Along with introducing technical improvements and innovations in the brick production processes, ICIMOD also works closely with the FNBI to help brick entrepreneurs in Nepal understand how improved working conditions in the brick kilns can boost productivity. Brick production is a large source of seasonal employment in Nepal, providing approximately 300,000 jobs, mostly to migrants from marginalized and highly vulnerable social groups.

The social component in ICIMOD's Clean Bricks Initiative generates evidence that by improving the working and living conditions of workers – especially, women – productivity gets enhanced, resulting in higher revenue for kiln owners.

A gender needs assessment identified three priority areas: health, workplace safety, and education for workers' children. Based on these priority areas, action research interventions were introduced in seven showcase kilns across Nepal.



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## Code of conduct being formalized for gender and social inclusion in the brick sector

The FNBI and other stakeholders in the Nepalese brick sector have been working on gradually making the sector environmentally and socially responsible. Developing a formal document governing the sector is a significant step towards integrating gender and social issues to improve the working and living conditions of brick workers, both women and men. The draft social Code of Conduct (CoC) developed by the FNBI with technical support from ICIMOD and MinErgy Pvt Ltd – has been prepared in line Nepal's Labour Policy (2075) and the Occupational Safety and Health-related Brick Kiln Directives (2075).

FNBI district chapters endorsed the draft CoC at a national consultation workshop on Nepal's brick sector in Kathmandu in June 2019. Entrepreneurs discussed the inclusiveness and practicality of each of the 20 domains under four principles in the CoC: end child labour; transparent employment conditions; basic workplace facilities; and safe workplace for women workers. Each domain has a checklist which will measure progress against each principle. This will provide evidence on how many domains under each principle are implemented on the ground effectively and documented properly. Next steps for the Social CoC are:

- A committee will be formed with representatives from the FNBI Social Committee and province-level representatives to finalize the draft CoC.
- The final draft of the CoC will be further shared and discussed with brick entrepreneur members of the brick associations from all 24 districts. The discussion will provide further feedback, create awareness, and initiate sensitization programmes along the lines of the CoC's stipulations.
- The final draft of the CoC will be prepared in consultation with a lawyer to verify its legality.
- The final CoC will be prepared in simple, understandable language (and not in legal terms) for the benefit of all brick entrepreneurs and workers.
- A province-level social CoC for the brick sector will also possibly be drafted on the basis of this CoC.



# About ICIMOD

The International Centre for Integrated Mountain Development (ICIMOD), is a regional knowledge development and learning centre serving the eight regional member countries of the Hindu Kush Himalaya – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and based in Kathmandu, Nepal. Globalisation and climate change have an increasing influence on the stability of fragile mountain ecosystems and the livelihoods of mountain people. ICIMOD aims to assist mountain people to understand these changes, adapt to them, and make the most of new opportunities, while addressing upstream-downstream issues. We support regional transboundary programmes through partnership with regional partner institutions, facilitate the exchange of experience, and serve as a regional knowledge hub. We strengthen networking among regional and global centres of excellence. Overall, we are working to develop an economically and environmentally sound mountain ecosystem to improve the living standards of mountain populations and to sustain vital ecosystem services for the billions of people living downstream – now, and for the future.

## REGIONAL MEMBER COUNTRIES



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BANGLADESH



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CHINA



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NEPAL



PAKISTAN

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