BRICKS INITIATIVE
PROGRESS REPORT 2016-2017

LEAD PARTNERS
Center for Human Rights and Environment (CEDHA), Colombia, Institute for Advanced Sustainability Studies (IASS), Institute for Governance and Sustainable Development (IGSD), Mexico, Switzerland, World Bank

IMPLEMENTERS
Corporación Ambiental Empresarial (CAEM), Center for Human Rights and Environment (CEDHA), Climate and Health Research Network (CHRN), Federation of Nepalese Brick Industries (FNBI), International Centre for Integrated Mountain Development (ICIMOD), Green Tech Knowledge Solutions, National Institute of Ecology and Climate Change (INECC), MinErgy Pvt. Ltd. Nepal, Mountain Air Engineering, Swiss Foundation for Technical Cooperation (Swisscontact), University of Illinois

TOTAL BUDGET FROM THE COALITION SINCE THE START OF THE INITIATIVE: $3,872,435
TOTAL BUDGET SPENT: $2,706,556

NOTE
This document presents results from the Climate & Clean Air Coalition’s Bricks Initiative reported between July 2016 and June 2017. These results were recorded using the Demonstrating Impacts indicators, which have been approved by partners as the “common currency” to monitor and communicate impacts across the Coalition’s initiatives and workstreams.

Presented achievements are the result of collaborations between multiple stakeholders, including national governments and cities, international organisations, NGOs, research institutions and the private sector. Some are a direct result of activities funded or co-funded by the Coalition, while others are indirect achievements in which the Coalition’s actions played a catalysing role.

1 The latest version of the Demonstrating Impacts Framework is accessible to partners here where the online tool to report new results is also accessible and open throughout the year.
DEMONSTRATING IMPACTS SUMMARY

OUTCOMES

1,000 USERS OF THE DESIGN MANUAL ON ZIGZAG KILNS IN NEPAL

The manual on how to design improved fixed chimney zig-zag brick kilns in Nepal was distributed to 1,000 stakeholders and downloaded 86 times. While the documentary now has 64 views.

9 MEDIA COVERAGE

The rebuilt of the brick kiln sector in Nepal, to which the CCAC contributed, has been covered by the BBC radio and TV and by two Nepalese newspapers. In addition, several medias covered the training on black carbon measurements in Colombia such as HSB Noticias.

15 INSTITUTIONS STRENGTHENED

13 institutions with whom work had already been engaged have gained new skills to respond to the brick sector challenges. These include the Ministries of Environment of Colombia, Chile, Mexico, Guatemala, Peru, Paraguay, the Ministry of Labour in Argentina, two universities in Colombia and some other governmental and private sector institutions in Colombia and Paraguay. In addition, as a result of their participation in the initiative, two newly targeted brick owner associations in Bangladesh and Pakistan are using the initiative manual to convert inefficient brick kilns.
1 COMMITMENT

The United Kingdom Department for International Development Nepal division committed GBP 4.5 million to continue the effort on the rebuilt of the brick kiln sector in Nepal.

4 STRATEGIES

Throughout the year, the initiative supported the development of brick sector strategies in Colombia, Mexico, Paraguay and Argentina. These strategies aim at making the industry more energy-efficient, environment-friendly and socially responsive.

2 EMISSIONS STANDARDS

Supported through its engagement in the CCAC activities, Colombia has drafted and submitted for adoption an amendment to revise its emissions standards for atmospheric pollutants from fixed sources. In Nepal, the rebuild of the brick kiln sector, during which the CCAC supported the phased in of more efficient kilns, led to the development of more stringent emissions standards for the sector that are now being considered by the government.

259 CHANGES TECHNOLOGIES AND PRACTICES

After attending trainings supported by the CCAC, three Bengali and one Pakistani entrepreneurs have started to build zigzag kilns. In Latin America, following capacity building activities co-organised by the initiative, more energy efficient technologies, such as extruders and fans, and practices were adopted for 255 brick kilns in Brazil, Colombia, Mexico and Peru.

IMPACTS

194,775 TONNES OF CO2 EMISSIONS AVOIDED

Adoption of more energy efficient technologies and practices for 255 brick kilns in Brazil, Colombia, Mexico and Peru led to a reduction of 194,775 tonnes of CO2 emissions.

NARRATIVE REPORT

SUMMARY

One of the more salient highlight for the bricks initiative in the past year is the commitment to national policy development around traditional brick production in Latin America, most notably the development of bricks sector NAMAs in Colombia and Peru, and the conclusion of the relevant information analyses for development of a national program for reducing contamination in and increasing the economic efficiency of the traditional brick sector in Mexico. This is the culmination of coalition-supported work in the region to enhance knowledge, catalyse action, and build robust policy and technical support.

To advance knowledge, the Coalition supported the acquisition and use of top-of-the line measurement instrumentation, which was used to develop emission factors and emission inventories that are being used as direct input for development of Colombia’s and Peru’s bricks sector NAMAs. The work in these countries is now poised to spill over to other countries such as Chile and Mexico.
To catalyse action and support policy development, the Coalition supported extensive training and capacity-building activities in both Latin America and Asia. This was complemented by activities to build robust support and peer-to-peer networks in the form of Policy and Advocacy Networks (PAN) for both Latin America and Asia. In the Latin American example, the confluence of science-based knowledge, training and capacity building, and engagement with governments has led to the development of national policies for the bricks sector, and it is both a challenge and an opportunity for the region to convert this momentum to changes at scale.

In the Asian region, one of the initiative’s big successes has been the mobilization of financial resources for the brick industry in Nepal in the form of GB 4.5 million from the UK Department for International Development. This financing was catalysed by coalition-supported work on rebuilding after Nepal’s 2015 earthquake, which led to the development of a design manual for the construction of improved brick kilns. Opportunities to deepen and expand the bricks initiative work in Asia include capitalizing on interest and expertise from the Asian Development Bank and the World Bank to develop training and capacity building programs.

Overall, the initiative sees it as both a challenge and opportunity at this juncture to find partners and resources to help carry forward the momentum and engagement to address contamination and efficiency in the traditional brick sector to generate change at scale, since needs are seen beyond what the Coalition will be able to finance. This will include developing financing strategies for the brick producers to undertake kiln upgrades themselves, and also to ensure continued technical and policy guidance for public sector representatives currently engaged with the Coalition. To address these challenges the bricks initiative has recently revised its initiative strategy, for which we are currently seeking feedback from the steering committee.

HIGHLIGHTS

A key highlight for the bricks initiative has been the national commitments to policy development for the brick sector in Latin America. In Colombia and Peru, bricks sector NAMAs are under development, and are expected to reduce the GHG emissions in the sector by 25% to 30% in each country. These reductions will contribute to the NDCs in both countries. Mexico is in the final stages of gathering the relevant information and analysis to start the development of a national program for the bricks sector, which will include the comprehensive management of social, economic, environmental and innovation policies. Mexico has made significant progress on a regional level (e.g. in Jalisco, where it intends to build a brick park, with a local fund and a project in progress to define the best technology), although there is still a strong need for coordination for the development a national sectoral program. This success in the development of policies for the bricks sector can be attributed to a suite of actions by the Coalition to both catalyse action and mobilize robust support.

In the past year, the Coalition funded brick kiln field measurements covering a variety of kiln types across 7 regions in Colombia, using the black carbon measurement protocol also developed with support from the Coalition. This measurement work and analysis has resulted in a robust emissions inventory of PM2.5 and black carbon emissions factors that the Colombian Ministry of Environment and Sustainable Development has used as a baseline for the formulation of a brick sector NAMA. Beyond the Colombian context, the emission factors developed from the measurement work will be used to feed into the Supporting National Action Planning (SNAP) Leap IBC tool to help generate scenarios for the development of a brick sector NAMA for Peru.
Furthermore, the bricks sector market study in Mexico that was supported by the Coalition has provided robust data on the sector, including policy portfolio recommendations and econometric models. The market study built on previous work by INECC on emission measurements and personal exposure assessments, which were also undertaken as part of the bricks initiative. The market structure information and future business information developed from the bricks sector market study will be directly used as input towards developing Mexico’s national program for the bricks sector.

In addition to the coalition-supported science and knowledge products that have been necessary backbones for policy development in Colombia, Peru, and Mexico, the Coalition has been involved in a wide range of training and outreach activities that have resulted in the necessary momentum and engagement, creating an enabling environment for development of new policies for the bricks sector. The coalition-supported Policy and Advocacy Network for Latin America and the Caribbean (PAN-LAC) has been an important forum for peer-to-peer exchange that has built momentum, increased the willingness of countries in the region to engage, and acted as a catalyst for policy development. In addition to the examples of Colombia, Peru, and Mexico, who are already advanced in their commitments to create national policies for the bricks sector, the PAN-LAC has spurred interest in engagement in other countries as well. This can be seen in Paraguay’s decision to develop an initial assessment of its brick sector with policy recommendations for opportunities for modernizing, increased interest from Argentina’s Ministry of Labour to solidify its engagement in the brick sector and deepen engagement on social impacts, and interest from the Maule Region in Chile to assess technology options for future transformation of its sector. The work on peer-to-peer network development has been complemented by a host of coalition-supported trainings, totalling approximately 543 hours of training for 435 stakeholders for the period from July 1st, 2016 to June 30th, 2017. This includes trainings in both Latin America (Argentina, Brazil, Chile, Colombia, Guatemala, Mexico, Paraguay, Peru) and Asia (Bangladesh, Pakistan, India and Nepal) on technologies as well as policies.

In the Asian region, a key highlight for the initiative has been the mobilization of financial resources for the brick industry in Nepal, catalysed by the coalition-supported work on rebuilding after the 2015 earthquake. The UK Department for International Development (DFID) is providing GB 4.5 million for work including the modernization of brick kiln technologies, capacity-building for government and brick producers, and policy reform, including addressing the social aspects of the bricks sector. Nepal’s experience in rebuilding after the earthquake has also resulted in increased capacity for the Brick Association of Pakistan, based on the coalition-supported design manual for the construction of improved brick kilns. The Pakistan brick association has internalized the cleaner technology along with the national Government institutions Pakistan Environment Protection Agency (Pak-EPA) and National Energy Efficiency Conservation Authority (NEECA), who are engaged and looking into whether internal resources could be mobilized to support the brick association in promoting adoption of cleaner technology kilns.

**CHALLENGES**

The bricks initiative has, since its inception, made significant progress bringing visibility to the significance of emissions contamination from the brick sector, and in getting bricks on the political and climate change agenda of multiple countries. Through the bricks initiative the Coalition is providing the technical support (e.g., on technologies) and knowledge (e.g., emissions factors) needed to support decision making, both by brick makers and governments,
as well as extensive technical training to producers to identify inefficiencies and opportunities for technological innovation. This has resulted in several successful kiln conversion projects and engagement by governments in both Latin America and Asia.

A key challenge for the initiative at this stage in its development is sustaining the momentum that has been created, and moving to interventions and transformation at scale. This will require maintaining and ramping up engagement with governments as well as training, research, and networking activities beyond what CCAC financing will be able to provide. Accordingly, finding the financial support for sustainability and expansion of bricks initiative activities is a crucial challenge for the initiative, as is securing at scale financing for wholesale technological investments for the sector (i.e., for brick producers) as a whole.

The informality of the bricks sector is also a challenge that the initiative has faced since the beginning, and progress has been made in raising awareness of the importance of taking action in the sector. However, the informality of the sector remains a barrier to wholesale reform at scale, as the move to cleaner and more efficient technology in brick production generally means crowding out lower technology alternatives by promoting ovens that are larger and more productive than the traditional, higher contaminating family-run kilns. As this trend continues, many informal family brick businesses and other small production units are left without livelihoods. The informal nature of the sector and the implied consequences of modernization necessitate consideration for the social impact dimensions of the sector. This dynamic can also contribute to a lack of a clear vision by countries of where to take the brick industry in the near term, making it difficult to promote public policies for the transformation of the sector.

On the technical side, brick producers still lack knowledge on the type of technology improvements to be made, so a need for training, knowledge-sharing, and technical assistance remains. A demand for continued emissions measurements also creates a need for additional technical assistance to those who will be making the measurements. New efforts on training for policy makers are also relevant.

Overall, it is important to go beyond the fundamental technical trainings and move to strategies for implementing demonstration pilot projects for the mitigation of black carbon in regions with the most advanced efforts in the area.

To address emerging challenges and reflect the evolution of the bricks initiative so far, the bricks initiative is in the process of revising its initiative strategy, which has been reviewed by lead partners and will be shared with the Steering Committee for their feedback.

LESSONS LEARNED

One lesson that has emerged from the initiative’s extensive training and networking activities is that bricks producers will opt for technical change provided that: they can check on the spot that the technology works; they can exchange information with other brick producers who use the technology; they can observe that their neighbouring producers are modernizing and that there are associated economic benefits; they have the option to choose from a catalogue of different technologies; and they can access the necessary investment finance at reasonable rates to secure the transformation. As a corollary to this, it is important to link producer associations in countries, as peer-to-peer exchange has been shown to be effective and results in a greater dynamic of dissemination of technologies. As one example, the virtual platform www.redladrilleras.net has been an important tool for the exchange of knowledge.
among producers and has provided a space for the technological and financial suppliers to be identified in a more practical and dynamic way. These lessons have direct implications for how trainings should be designed. Producers prefer to receive training/technical assistance via exchanges and field visits, in which experts also participate, enabling them to connect directly with producers and their technologies in operation. Furthermore, demonstration workshops and entrepreneur missions that include the participation of technology suppliers and financial entities facilitate greater linkages between the actors in the chain, which streamlines the processes of technological conversion.

During the last 8 years of work developed by Mexico, one of the most important lessons learned is that any local or national program on the artisanal brick sector must be supported by several institutions, e.g. universities, research centres, nongovernmental organizations, technical experts, producers and/or decision makers with a strong background and experience in the artisanal brick sector. The risk to not include the above-mentioned support is the loss of economic resources, which can result in program failure. Mexico has also found that an effective strategy is to move away from the "man-kiln" concept towards industrial cooperatives where brick producers are able to access greater technologies, improve their incomes, reduce pollutant exposure and mitigate black carbon emissions with direct benefits for air quality and climate change.

On the finance side, the initiative has seen that securing financing for producers to invest is critical for the informal sector, which often has insurmountable barriers to entry; without eliminating these barriers change at scale is unlikely. It is important that producers have a strong interest to invest in their own initiative; the expectation of receiving direct support from the government for conversions tends to result in little interest in investing in more efficient equipment. When considering which technologies to promote, the necessary investment for the brick producers should be kept in mind; technologies that are seen as too costly will be dismissed as unfeasible.

In terms of developing public policies, the initiative experience is that ongoing engagement and technical assistance to governments is necessary to keep the bricks agenda afloat. Developing public policy for the bricks sector requires a comprehensive approach that incorporates various dimensions (economic, social, environmental) and key actors in the sector. This requires recognition of the fact that addressing the bricks sector is more than just a technical problem. Ultimately, the development of policy and regulations for the bricks sector is seen to have a positive effect, without which the encouragement of cleaner production processes is difficult.

**OPPORTUNITIES**

The bricks initiative has an opportunity to capitalize on the engagement and momentum it has built so far to promote change at scale within the bricks sector. In Latin America, there is an opportunity to build on the connectivity between local partners to support the development of demonstration events and encourage peer to peer learning.

For measurement work, including academia has proven to be fruitful; there is an opportunity for increased engagement in this sphere.

In Brazil, both the Ministry of the Environment and the Ministry of Science and Technology have shown interest in continuing to support the work done with the brick industry, in part due to the increase in demand for the modernization of the brick industry in the northern region of the country.
The bricks initiative also has several important opportunities to expand its work in Asia. In part, this is aided by external market forces. As an example, post-earthquake reconstruction in Nepal has increased the demand for more resilient construction material, an area where the coalition has already been active in its development of the design manual for the construction of improved brick kilns. In general, economic growth leads to an increased cost of land and labor, making old, inefficient technologies less competitive and offering opportunities to make new technologies more viable.

There are also opportunities for synergies and partnerships with other activities in the Asian region. For instance, TERI [The Energy and Resources Institute, India] has been engaged in various policy-level interventions specifically focusing on particulate matter emissions from the brick kilns and adoption of resource efficient bricks like perforated bricks and hollow blocks. This presents an opportunity to learn from and build on their experience to achieve at-scale brick kiln conversions in the region. There is also an opportunity for future cooperation with the Asian Development Bank (ADB) on enhancing the awareness and capacity of the region’s brick industry to transition to greener solutions. The ADB has suggested that the training sessions the Coalition has supported in India and Nepal could be a strong base to build on for the future work. The World Bank has also directed its attention toward brick making, and will soon be publishing a document entitled “South Asia Brick Making: A critical sector for air pollution, development, and climate change.” Their interest and expertise in the sector is also something for the initiative to capitalize on as it expands its work in Asia. In general, the bricks initiative also sees an opportunity to find a niche for bricks within the broader sector of building and construction, as a way to leverage funding and ensure the sustainability of interest and engagement around bricks. Potential partners to reach out to could include, e.g., the Global Alliance on Building and Construction (GABC), 10YFP Programme on Sustainable Building and Construction, and UN-HABITAT.

In Latin America, specific opportunities to engage with the building and construction sector have been identified, including the ANICER or ANFAMEC Fair in Brazil, the Construction Fair in Colombia or events of the Chamber of Construction in Peru. These forums seek to promote more energy-efficient and less carbon-intensive building materials, and could be a valuable platform to exchange knowledge and share experiences from the bricks initiative.