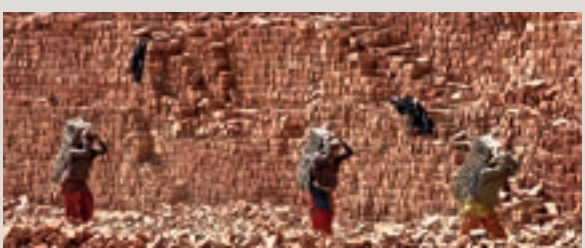
BRICK by BRICK









BROOKE
ACTION FOR WORKING HORSES AND DONKEYS

THE DONKEY SANCTUARY

International Labour Organization

Environment, Human Labour & Animal Welfare

Unveiling the full picture of South Asia's brick kiln industry and building the blocks for change

First published 2017

ILO-FUNDAMENTALS, Brooke and The Donkey Sanctuary

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Donkey with boy handler, Kathmandu Valley
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Furnace workers, Sukkur, Pakistan

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FOREWORD

The brick making industry is an industry that is developing rapidly in South Asia. With a rise in the urban population expected to reach 250 million by 2030, it will continue to grow and with it, a host of significant challenges that impair development and drive unfair, harmful and often illegal practices that need to be tackled.

In this report, Brooke, The Donkey Sanctuary and the International Labour Organisation have come together to raise the visibility of the brick kiln industry in South Asia, and for the first time, highlight its multi-sectoral nature: the environment, human labour and working animal welfare. The report brings a new and unique perspective on the brick kiln industry and its challenges in this region. It emphasises the need for all sectors to work together, coordinate and cooperate, to give greater priority and attention to the industry and its challenges.

While there may not be any quick or easy solutions, I believe this report provides a strong foundation for initiating urgent discussions on the issues it raises. It should serve as a catalyst for policy makers and implementers, UN agencies, NGOs, the donor community, the private sector, trade unions, and brick kiln industry actors to engage and to come together in a collective action to change the face of the brick making industry in South Asia.

Together I believe we can be the drivers of change. I hope to see a broad coalition of actors working with us to foster the sort of regional development we all wish to see: one that not only safeguards and benefits people, animals and the environment for generations to come but also acts as a catalyst to drive the relevant Sustainable Development Goals and Targets. Taking note of this, the 6th Governing Board Meeting of SAIEVAC held in Colombo on the 17-18th March 2016 also endorsed the convening of a regional policy event to discuss the complex issues highlighted in the report.

On behalf of the South Asia Initiative to End Violence Against Children, I am proud to lend my support to the Brick Kiln Advocacy Taskforce's initiative and the publication of this report.

Dr. Rinchen Chophel
Director General
South Asia Initiative to End Violence Against Children [SAIEVAC] SAARC Apex Body

EXECUTIVE SUMMARY

The traditional brick making industry is the backbone of urban development throughout South Asia. It employs millions of people and hundreds of thousands of animals working in extremely hazardous and tough conditions. It also generates highly pollutant emissions. From the sourcing of its workforce to its socio, economic and cultural underlying factors, the brick making industry is complex and has manifold dimensions that make addressing the challenges it faces extremely difficult.

Despite its significant impact on people, animals and the environment, the traditional brick making industry has received little political attention and remains largely free from operating without being made accountable for its use and treatment of workers and animals, working conditions and its impact on the environment.

This report aims to increase knowledge and understanding of the brick making industry in South Asia with a particular focus on four countries - Afghanistan, India, Nepal and Pakistan. It focuses on the critical linkages between the human, animal and environmental sectors and highlights the main challenges faced by the industry today, as well as the political, economic, social and cultural obstacles to change. It seeks to foster a constructive dialogue with all key stakeholders at the national, regional and international levels, identify pathways for making positive, sustainable changes, and for promoting a collaborative approach that could transform the industry in the region.

The first chapter of the report gives an overview of brick kiln technologies and brick production globally, whilst the second chapter focuses on the use of traditional brick making in South Asia, providing a comprehensive explanation of the sourcing and use of human and animal workers.

Chapter Three concentrates on the environmental impact of the traditional brick kiln technologies on all forms of life including human lives. It considers the main barriers to modernising the brick making industry in the region and highlights the inadequate policy and legal framework, in particular the weak implementation of instruments available to regulate or prohibit the use of harmful technologies. Finally, it considers key strategies for change and examples of successful and positive initiatives that are currently being implemented.

Chapter Four looks at the use of human labour in the kilns. It puts the spotlight on the highly prevalent illegal practices of bonded and child labour, and the workers' extreme vulnerability and precarious living and working conditions, leading to a number of detrimental health consequences. It then provides an overview of the policy and legal environment relevant to human labour in the brick kilns, in particular the ILO Conventions, and acknowledges the similarities with the environmental sector around the lack of, or weak implementation and enforcement of the instruments available. Finally, chapter Four considers key strategies for change as well as examples of projects that have led to the improvement of workers' conditions in the kilns.

Chapter Five focuses on the use of animals in the brick kilns. It provides the first comprehensive account of their contribution to the traditional brick making industry. The Chapter considers their sourcing, their roles in the brick kilns, their living and working conditions and the impact on their health and welfare. It then highlights the current limitations of the policy and legal framework for working animals in the brick kilns, including the lack of appropriate instruments and institutional anchors at the national and international levels. It does however note the opportunities brought on by new global standards for working equine animals. Finally, the Chapter highlights key approaches to improve the welfare of working animals that have been successfully implemented.

Having provided a comprehensive overview of the main sectors and issues pertinent to the traditional brick kilns, the last chapter sets out the key common challenges across the three sectors and explores opportunities to raise the visibility of the industry and to build momentum and multi-sectoral and multi-stakeholder collaboration and action towards transforming the traditional brick making industry in South Asia. It concludes with a set of recommendations aimed at national, regional and global policy makers and influencers, to be discussed at the SAIEVAC convened Regional Conference on the Brick Kilns in South Asia held in Nepal in January 2017.

KEY RECOMMENDATIONS

Leadership and Commitments

- The traditional brick making industry is largely invisible on the global, regional and national policy agendas. Greater political leadership and action are needed to make the brick kiln sector more visible and a higher priority for policy makers and implementers, including as part of the implementation of the 2030 Agenda for Sustainable Development.

- National governments must prioritise effective measures to tackle the brick making industry's challenges, including through the establishment of adequate and effective institutional arrangements, the development of strategies with clear outcomes, measurable targets and well resources and championed at the highest level.

- National governments must establish a coherent policy, legal and regulatory framework that addresses the environmental, human labour and animal welfare issues in the brick kilns, as well as ensure its adoption and its effective implementation.

- At the regional level, SAARC must commit to making brick making one of their key priorities and work with national governments to address the challenges of the industry in the region.

- Global, regional and national political leaders should organise a high level political summit dedicated to the brick making industry in South Asia by January 2018 with a view to formulating a Roadmap for transforming the brick making industry and tackling some of its most pressing challenges.

Cooperation and Coordination

- International and regional cooperation is fundamental to supporting countries' capacity to deliver changes in the traditional brick making industry. There are examples of the positive impact of cooperation around technical support on improving brick making technology. These must increase and cooperation between the sectors of human and animal welfare must also be considered.

- The human labour, animal welfare and environmental sectors must work together more proactively to find integrated solutions, building on key linkages such as health and existing partnerships, and existing partnerships such as the Clean Air and Climate Coalition's Brick Production initiative and the emerging framework of "One Health – One Welfare".

- Civil society organisations must come together to coordinate their action, work with governments, raise awareness on the brick making industry by engaging policy makers and influencers such as parliamentarians and the media, and make governments accountable for commitments made and the implementation of plans and strategies.

- Coordination mechanisms to develop and implement a multi-sectoral and multi-stakeholder agenda must be set up in country and led by national governments.

- Donors must support and collaborate with national governments to develop multi-sectoral policy and programmes and ensure their effective implementation. They must also coordinate to ensure coherence in the delivery of technical assistance and mobilisation of resources to implement policy and programmes.

Multi-Stakeholder and Multi-Sectoral Action

- Multi-stakeholder and multi-sectoral platforms for coordination and action at national level must be established and drive the transformational agenda of the brick making industry in country.

- National governments in country and SAARC at the regional level must take the lead in setting up and institutionalising these platforms.

Data Collection and Research

- The full picture of the brick making industry in South Asia remains largely unknown, with no or limited official data on the number of brick kilns, the technology used, and the use of human and animal labour. Collecting strengthened and comprehensive sets of national and regional data across sectors must be led by national governments and include, as a matter of priority:

- Setting up information systems on the brick kilns in South Asia to provide baselines and track progress.

- Large scale studies on the environmental, human and animal health and welfare impact of the traditional brick kiln technologies.

List of Acronyms

AHTCS	Animal Health Training and Consultancy Service
AQC	Air Quality Cell
BBN	Better Brick Nepal
BCGN	Brick Clean Group Nepal
BKP	Transport of Bricks by Pack
BKC	Transport of Bricks by Cart
BPI	Brick Production Initiative
BTKs	Bull's Trench Kilns
CCAC	Climate & Clean Air Coalition
CO_2	Carbon Dioxide
DW	Decent Work
DWT	Decent Work Technical Support Team
DWCP	Directory of World Chemical Producers
EU	European Union
FAO	Food & Agriculture Organisation
FCAN	Federation of Contractors´ Associations of Nepal
FCBTK	Fixed Chimney Bull's Trench Kiln
FNBI	Federation of Nepal Brick Industries
ICIMOD	International Centre for Integrated Mountain Development
ILO	International Labour Organisation
INDCs	Intended Nationally Determined Contributions
MCBTK	Movable Chimney Bull's Trench Kiln
MDG	Millennium Development Goal
MoEF	Ministry of Environment and Forestry
MinErgy	MinErgy Pvt. Ltd (Nepal)
OIE	World Organisation for Animal Health
PAN	Policy and Advocacy Network
SAIVEC	South Asia Initiative to End Violence Against Children
SDGs	Sustainable Development Goals
SDPI	Sustainable Development Policy Institute
SLCP	Short Lived Climate Pollutants
SPARC	Society for the Protection of the Rights of the Child
O3	Tropospheric Ozone
UN	United Nations
UNEP	United Nations Environment Programme
VSBKs	Vertical Shaft Brick Kilns
WHO	World Health Organisation

INTRODUCTION

1. Background to the Report

In March 2015, the first cross-sectoral regional advocacy workshop on the brick making industry in South Asia was held in Kathmandu, Nepal at the initiative of Brooke. Participants included global, regional and national NGOs and UN agencies, as well as technical experts engaged in programmatic and advocacy work in the sectors of human labour, working animal welfare, and the environment in the brick kilns in South Asia.

The workshop aimed to build a dialogue between interested stakeholders across these sectors and explore common opportunities and challenges amongst them. The workshop led to the identification of a number of cross-sectoral issues, an agreement on the need to increase coordination and collaboration amongst the sectors, and the formation of an informal Brick Kiln Advocacy Taskforce made up of Brooke, the Climate Change and Clean Air Coalition (CCAC), The Donkey Sanctuary and the International Labour Organisation (ILO). The members of the Taskforce agreed to work together to raise awareness of the traditional brick making industry in South Asia and initiate a dialogue with key global, regional and national stakeholders across the three sectors involved in the industry.

2. Objectives of the Report

- Provide a comprehensive overview of the brick kilns in South Asia, with a particular focus on mapping and explaining the sourcing and provision of human and animal labour and the roles of the various stakeholders involved.

- Highlight the complexity and manifold dimensions of the industry by examining and articulating the crucial linkages across the human, animal and environmental sectors.

- Foster a constructive dialogue will all key stakeholders at the national, regional and international levels to identify pathways for making positive and sustainable changes, and to promote a collaborative approach that will initiate these in the brick kiln industry in South Asia.

3. Methodology and Constraints

The report is based on the systematic literature review and document analysis of more than 120 published and unpublished sources including research reports, academic journal articles, news articles and technical assessments. The lead author also spoke to 20 organisations and initiatives with projects in the brick kilns in South Asia – namely, Animal Health Training and Consultancy Service (AHTCS), Animal Nepal, Better Brick Nepal, Brooke, Brooke India, Brooke Pakistan, The Donkey Sanctuary, The Donkey Sanctuary India, Decent Work Technical Support Team (DWT) for South Asia International Labour Organisation-Pakistan, CCAC, Clean Air Task Force, the Brick Clean Network Group and the Global Fairness Initiative.

The research was constrained by the availability, reliability and accuracy of statistics on a number of indicators. Multiple sources were therefore analysed during the literature review to provide the most recent and accurate data where available.

Young man unloading bricks, India

Women carrying bricks to the furnace,
Kathmandu Valley, Nepal

OVERVIEW OF BRICK KILNS & GLOBAL BRICK PRODUCTION

Kilns have been in existence since 6000BC. They are types of oven that are used to harden numerous objects made from clay, including ceramics, bricks and tiles. Bricks produced in kilns are used throughout the world in the construction industry. Brick kilns have various types of technologies which use different firing techniques and have several levels of mechanisation. The raw materials they use, the number of workers employed, the investment they require and the quality of the bricks *produced* also differ between the types of kilns.

The brick making industry in less developed countries primarily use traditional (or artisanal) technologies whilst developed countries use modern machines that make bricks on a production line. Brick kilns can be broadly classified as two main types: traditional intermittent kilns and continuous kilns.

1. Types of Brick Kilns

1.1 Traditional Intermittent Kilns

Traditional intermittent kilns are small-scale[1] in nature and rely on human labour and in some cases animal traction. Kilns in this type include clamp, scove, scotch and down-draught. Clamp kilns are the oldest type of kilns and are a common feature in less developed countries.

Intermittent kilns quickly adapt to changing market demands and require low investments but they produce poor quality bricks. They also use cheap, low quality and pollutant fuels such as coal, biomass, old rubber tyres, ashes, waste engine oil/kerosene, and plastic.

Clamp Kiln

[1] *Small-scale units use about 10-30 workers and produce less than 50,000 bricks in each batch.*

1.2 Continuous Kilns

Continuous (or tunnel) kilns rely on constant firing and produce solid, hollow and perforated bricks. Efficient utilisation of heat makes these kilns economical in the use of fuel. However, they widely vary in efficiency, emissions and productivity, and the more advanced ones require higher levels of investment.

Movable Chimney Bull's Trench Kiln (MCBTK)

Vertical Shaft Kiln

Fixed Chimney Bull's Trench Kiln

Tunnel Kiln

Natural Zigzag Kiln

Fig. 1: Different Kinds of Traditional Continuous and Advanced Continuous Brick Kilns

Continuous brick kilns can be classified in two main categories:

1.2.1 Traditional Continuous Kilns

Traditional continuous kilns have permanent structures and are medium sized[2] enterprises. They are more advanced than the intermittent kilns and operate during the dry season using human and animal labour, although some machines, such as extruders are sometimes used. These types of kilns include movable chimney bull's trench kilns (MCBTK), fixed chimney bull's trench kilns (FCBTK), zigzag kilns, and vertical shaft brick kilns (VSBK).

1.2.2 Advanced Continuous Kilns

These kilns include Tunnel, Hoffman and Hybrid Hoffman and Cedan. They are large scale[3] and use the most efficient firing technology. They can operate all year round but their need for electricity and water make them expensive to run.[4] Animals are not used in these kilns and only a limited number of workers are required to operate the different machines.

[2] Medium scale units need about 20-40 workers to produce 30,000-40,000 bricks a day.
[3] Large scale units need about 10-20 workers to produce 20,000-50,000 bricks a day.
[4] UNIDO/ILO (1984). Small-Scale Brickmaking. Chapter VII – part III.

The main features of the kilns can be summed up on a continuum that reflects the differences between the most traditional kilns and the most advanced kilns. As the degree of mechanisation increases, the investment costs of these kilns. As a result, traditional kilns are more popular in small-scale brick making industries in South Asia.[5]

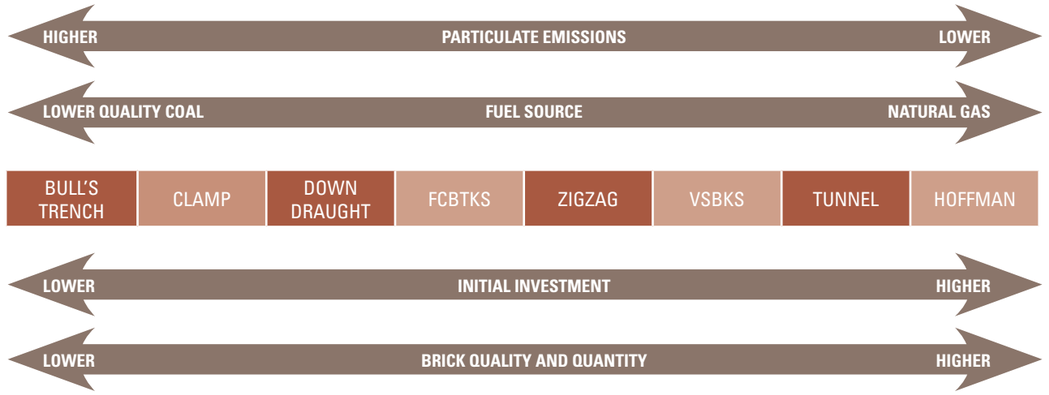


Fig. 2: Brick Kiln Continuum[6]

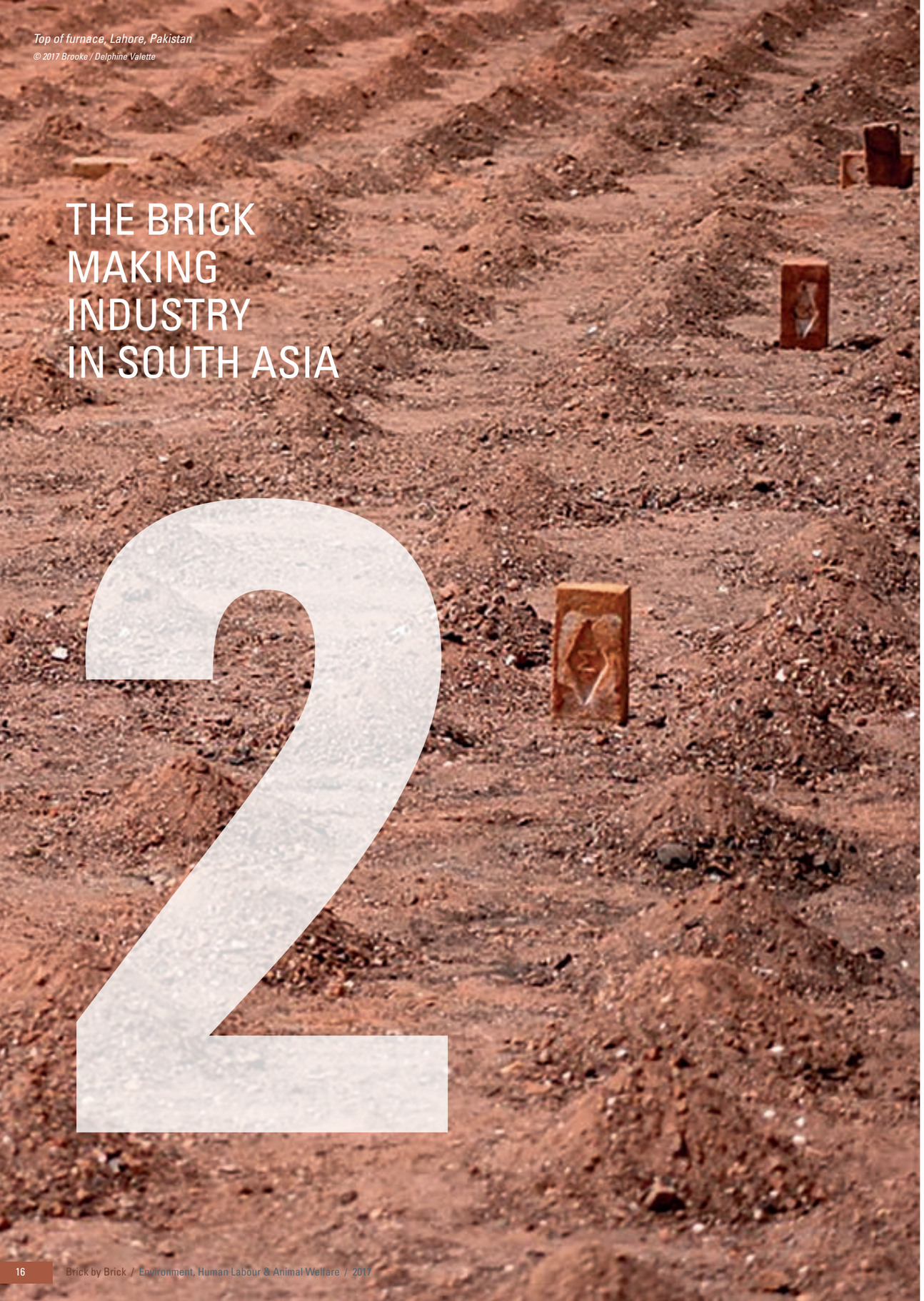
2. Brick Production Worldwide

An estimated 1500 billion baked-clay bricks are produced globally every year.[7] Most of the brick production is concentrated in less developed countries. Asia alone produces 1300 billion bricks, which accounts for 86.67 per cent of the world's brick production.

In Asia, China and Vietnam are the only two countries which have transitioned into using modern and efficient technologies for brick making.

Fig. 3: Estimation of Asia's Brick Production per annum[8]

[5] U.S. EPA (2012). Reducing Black Carbon Emissions in South Asia.
[6] Adapted from U.S. EPA (2012). Reducing Black Carbon Emissions in South Asia. Pg. 18.
[7] CSE-India (2015). Overview on brick kiln: pollution, technology and where we need to go? Presentation at Anil Agarwal Dialogue 2015, March 11. Pg. 3.
[8] Ibid.



Top of furnace, Lahore, Pakistan
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2 THE BRICK MAKING INDUSTRY IN SOUTH ASIA

Demand for bricks in South Asia is fuelled by the construction of housing, office buildings, car parks, and transport infrastructures such as roads and highways for the rapidly growing urban centres. A 2011 study predicts that South Asia will have the fastest and most sustained urban growth in the coming decades with the urban population in the region expected to double in the next forty years, from less than 600 million in 2010 to over 1.4 billion in 2050.[9] In India, the construction industry is regarded as one of the most important sectors in the economy as it provides about 35 million jobs and contributes 8 per cent of the country's GDP. The demand for infrastructure and services will continue to grow as India's towns and cities are projected to swell by an additional 404 million people by 2050.[10] Similarly in Nepal, which is primarily a rural country, there is a 7 per cent[11] increase in the urban population every year, and after the destruction caused by the 2015 earthquakes, this demand for bricks is projected to quadruple.[12]

1. The Traditional Brick Making Process in South Asia

The brick making industry in South Asia presents a relatively consistent picture in terms of the types of kilns used and the source and composition of its workforce.

Based on the number of brick kilns in the four main countries considered in this report (Afghanistan, India, Nepal and Pakistan) only 640 kilns of the estimated 150,000 kilns in South Asia are mechanised or semi-mechanised.[13] The popularity of traditional intermittent kilns and moving/fixed chimney bull's trench kilns is higher as they require very low investments, do not need electricity or water supply and they can be set up in remote locations.

	Pakistan	India	Nepal	Afghanistan
Down Draught		3,000		
Clamps		100,000		
Tunnel Kiln Technology		5		
Hoffman Kiln Technology		500		
Natural Draught Zigzag Firing Technology (Zigzag ND)		50		
Vertical Shaft Brick Kiln (VSBK)		110	25	
High/induced Draught Zigzag Firing technology (Zigzag HD)		2,000	150	
Movable/Fixed Chimney Bull's Trench Kiln (FCBTK)	11,500	35,000	450	No statistical record available

Table 1: Countries and Types of Brick Kilns[14]

[9] *United Nations Human Settlements Programme (2011). Affordable land and housing in Asia. Pg. 4.*
[10] *http://europe.newsweek.com/indias-booming-cities-built-blood-bricks-bonded-laborers-435745?rm=eu*
[11] *http://www.worldbank.org/en/news/feature/2013/04/01/managing-nepals-urban-transition*
[12] *MinEnergy & ShelterCluster Nepal (2015). Brick Production in Nepal. Pg. 4.*
[13] *Based on the calculations provided by the data available on the CCAC Brick Initiative Factsheets - CCAC (2014). Factsheets about Brick Kilns in South and South-East Asia.*
[14] *CCAC Factsheets – Brick Making in South and South-East Asia.*

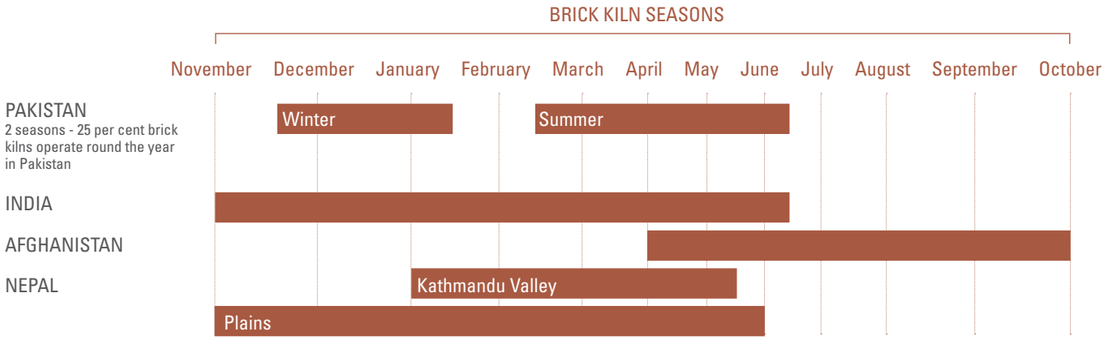


Table 2: Countries and their Brick Kiln Seasons

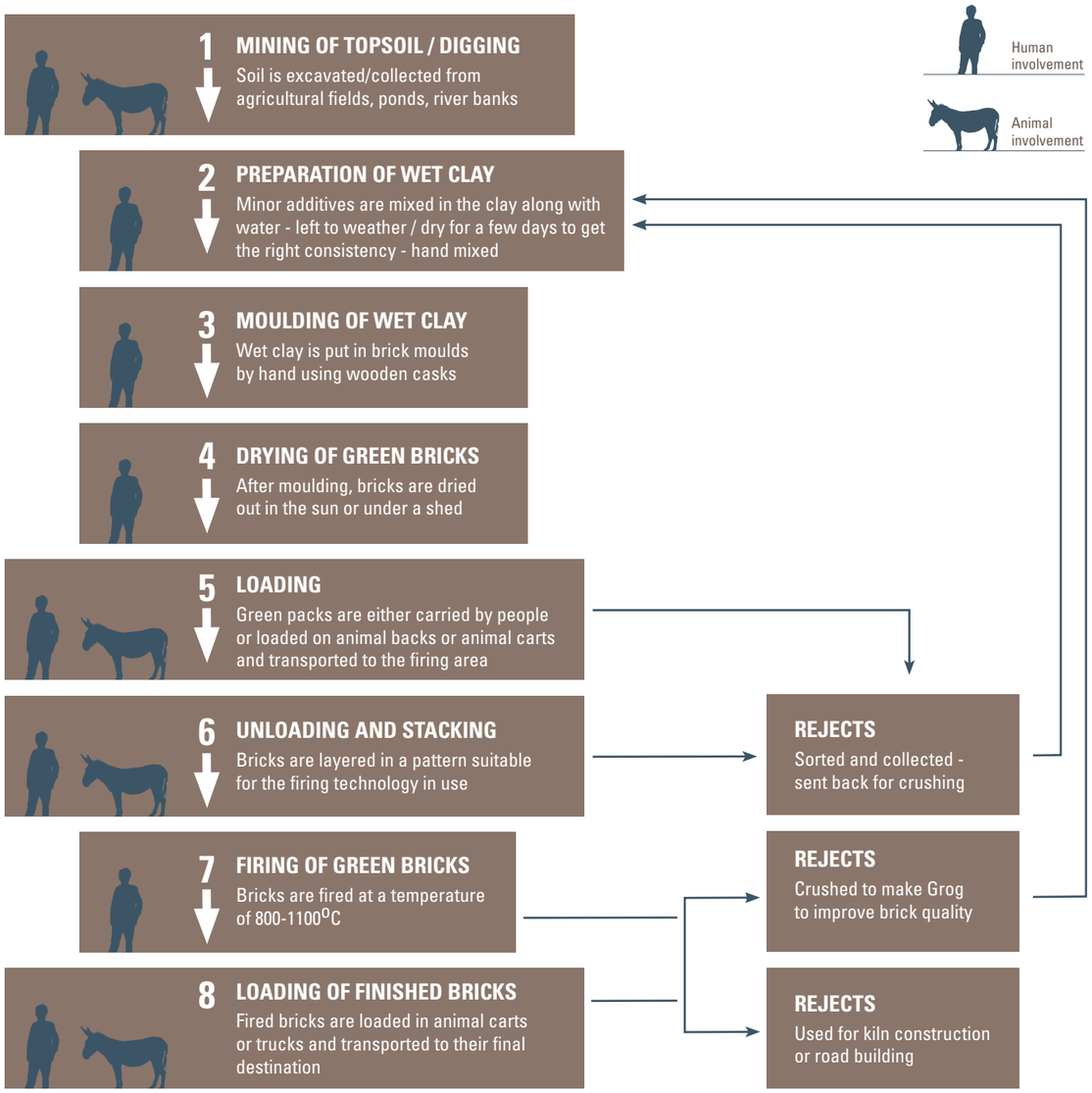


Fig. 4: Traditional Brick Making Process in South Asia[15]

1.1. Brick Kilns' Organisational Structure

The brick kilns across South Asia are highly hierarchical with little or no interaction between top and bottom.[16] They also involve a large number of roles with clear tasks and responsibilities.

OWNERS AND MANAGERS: Brick kiln owners either own the land or lease it from someone (which is commonly the case in Afghanistan)[17] They also sometimes work in partnership with the land owners, for example in Pakistan.[18] The majority of the brick kiln owners tend not to be present at the kilns and rely on a manager to oversee the operations, monitor brick production and calculate the wages for the workers.[19]

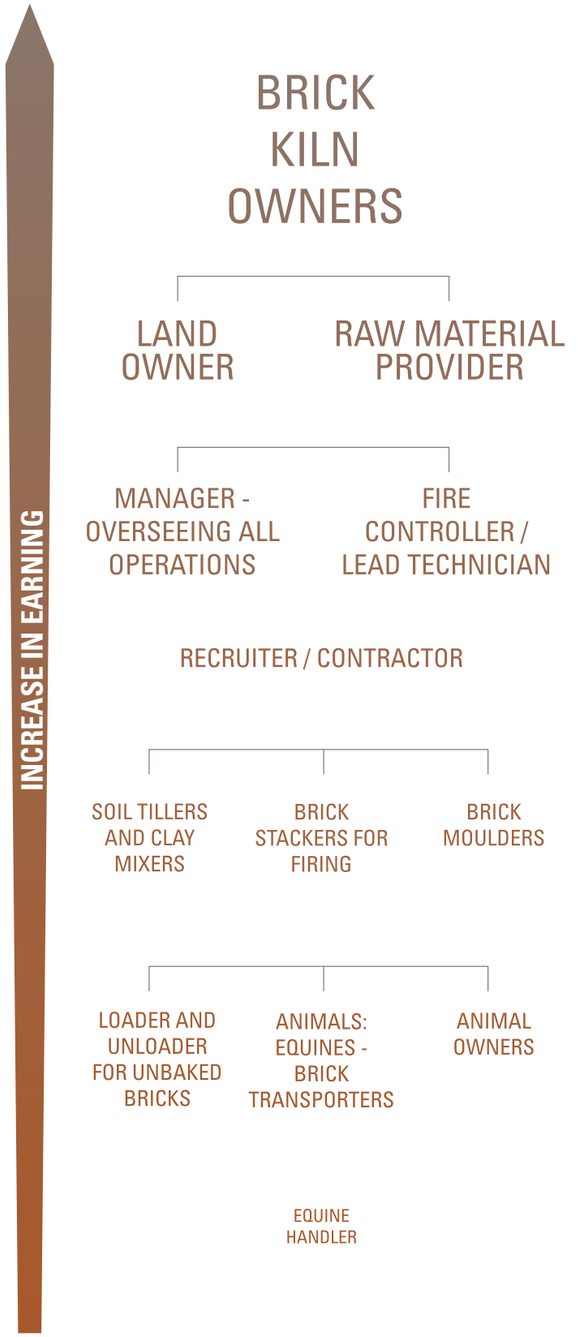
FIRE CONTROLLER/LEAD TECHNICIAN: The fire technician is the most important person on the kilns as he is responsible for efficiently managing the firing process. In some countries such as Pakistan[20] and Afghanistan,[21] the fire technician can earn as much as the manager.

RECRUITERS/CONTRACTORS: They are the middle men who play a vital role in sourcing and retaining workers and animals for the kilns, based on the requirements from the brick kiln owners. They also negotiate with brick kiln owners on the number of bricks to be produced, facilities, wages and advance payment before the season starts. They usually charge a commission fee for their services from kiln owners. In some cases, they may also take a percentage of the worker's earnings.

MANUAL WORKERS: These workers are at the bottom of the hierarchy and are most likely to be bonded labourers. They include brick stackers, clay mixers, land tillers and brick moulders. Manual workers earn according to the amount of work they do in a day. In many cases, two-three family members are involved together to mould 800-1000 daily.

ANIMALS, ANIMAL OWNERS AND HANDLERS: Animals are used for their traction power to carry un-fired bricks from the moulding area to the firing location as well as baked bricks from the kilns to retailers and customers. Animal owners get paid according to the number of trips the animals have made in a day. The animal handlers can be different from the owners and are the lowest in the pay hierarchy.

Fig. 5: The Hierarchy in the Traditional Kilns



[15] In this diagram, human labour is involved in all the steps and animals are used where indicated. Modified and adapted from UNIDO/ILO (1984). Small-Scale Brick-making; and Egbert, P. (1993). Status and development issues of the brick industry in Asia. The regional wood-energy development program (RWEDP) in Asia. FAO. Pg. 18.
[16] ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan.
[17] Ibid.
[18] Pakistan Institution of Labor Education and Research-PILER (2004). Unfree labor in Pakistan: Work, debt and bondage in brick kilns. Working Paper No. 24. Geneva: International Labor Office.
[19] Ibid.; and Prayas Centre for Labour Research and Action (CLRA) (2012). Wage Labour Atlas of Brick Kiln Workers. Aga Khan Foundation.
[20] Pakistan Institution of Labor Education and Research-PILER (2004). Unfree labor in Pakistan: Work, debt and bondage in brick kilns. Working Paper No. 24. Geneva: International Labor Office
[21] ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan.

The organisational roles in the kilns are broadly the same in Nepal, India and Pakistan. The roles are assigned on the basis of the sex and age of the workers, although this is dependent on individual brick kiln owners. Men usually act as managers, recruiters, fire controllers and brick stackers. Women, young boys and girls are usually involved in moulding and tilling of soil, as well as carrying bricks. Donkeys, horses and mules are used in the kilns and are usually handled by children and men although in India and Pakistan women sometimes work with the animals.

In Afghan kilns, women and girls do not work outside the home except in exceptional circumstances.[22]

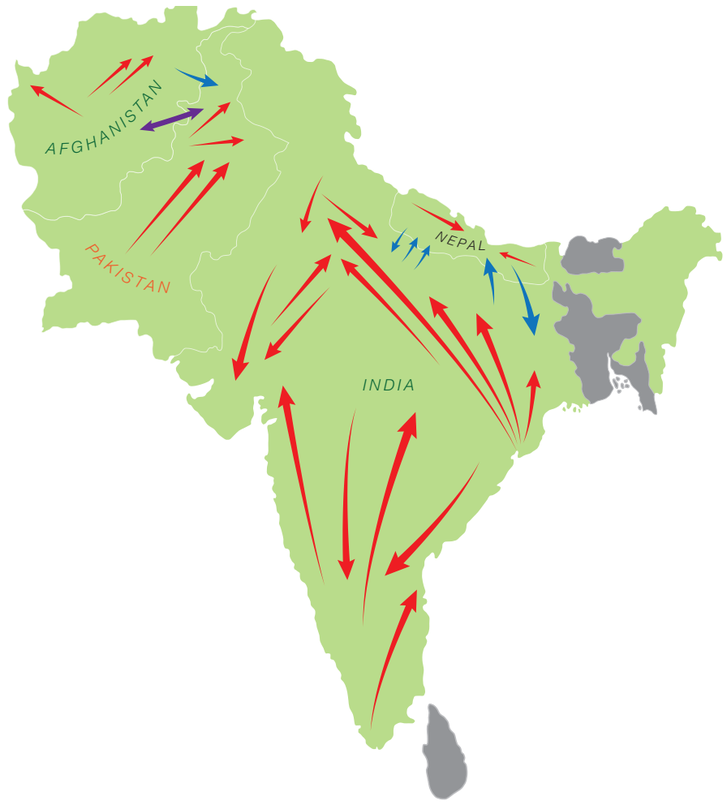
Similarities across the region have also been observed in the social composition of workers. All the workers, including the fire technicians are migrants. In particular, studies in Afghanistan,[23] India,[24] Nepal[25] and Pakistan[26] have found that the majority of the brick kiln workers are illiterate and belong to the most economically and socially vulnerable groups in the society.

2 Sourcing Workers and Animals

A medium-sized kiln may employ 50 to 100 workers on average, with 50 workers producing around 400,000 to 600,000 bricks in one month.[27] To feed this demand of workers, every year individuals, families, unaccompanied children and animals undertake in-country or regional migration to work in the kilns. Migration adds to the vulnerability of the workers and of the animals as the host location does not cater to the rights, welfare and needs of this fluid population. As Nepal and India have an open border policy and with a porous border dividing Afghanistan and Pakistan, illegal movement of people and animal between countries is common. Although there are no records of this migration, some patterns have been identified and recorded by agencies working in the brick kilns.

In this map, red lines indicate national migrations while the blue lines indicate international movements of workers and animals. The violet line indicates return migration which is common for many Afghani workers who return to Afghanistan after gaining skills in Pakistan.

Fig. 6: National and regional migration of workers and animals



[22] *Ibid.*
[23] *Ibid. Pg. 27*
[24] *Prayas Centre for Labour Research and Action (CLRA) (2012). Wage Labour Atlas of Brick Kiln Workers. Aga Khan Foundation.*
[25] *Kara, S. (2014). Bonded labor: Tackling the system of slavery in South Asia. Columbia University Press. Pg. 90*
[26] *Pakistan Institution of Labor Education and Research-PILER (2004). Unfree labor in Pakistan: Work, debt and bondage in brick kilns. Working Paper No. 24. Geneva: International Labor Office.*
[27] *Kara, S. (2014). Bonded labor: Tackling the system of slavery in South Asia. Columbia University Press. Pg. 88.*

Fixed Chimney Bull's Trench Kiln, Sukkur, Pakistan
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3 BRICK KILNS AND THE ENVIRONMENT

"The traditional brick making sector in Asia is thousands of years old and provides livelihoods to hundreds of thousands of poor people. The task of upgrading many small and medium brick industries in South and East Asia is indeed Herculean – yet highly feasible."[28]

1 What Makes Traditional Brick Kiln Technology Harmful for the Environment?

The role of the traditional brick kiln technologies in producing pollutants and its detrimental impact on the environment has received increased attention in the past few years.[29] The impact of traditional brick kilns is triggered by the nature of the emissions from the chimneys during the firing process and the high usage of fertile topsoil to make solid bricks.

The firing process and the structural design of the kilns do not allow enough ventilation, resulting in inefficient fuel-air mixing and incomplete combustion of fuel.[30] This generates black contaminated smoke containing carbon dioxide (CO_2), carbon monoxide (CO) and short-lived climate pollutants (SLCPs) such as black carbon. Whilst it is difficult to get representative averages of the pollutant effect of the traditional brick making industry as a whole,[31] recent studies[32] have started to demonstrate that the Fixed Chimney Bull's Trench Kilns and the Down Draught Kilns produce the highest amount of pollutants.

The reliance on large quantities of good quality soil also causes environmental degradation. Clay is obtained from excavating fertile alluvial soil from river beds, ponds and agricultural land. In India for instance it is estimated that approximately 100,000 brick kilns may use up to 400 million tons of good quality topsoil each year.[33] As a result, a non-renewable resource is becoming exhausted and problems such as soil erosion, depletion of soil quality and flooding are increasingly emerging.

2 Impact of Brick Kilns on the Environment and All Forms of Organic Life

In May 2015, the World Health Organisation (WHO) adopted its first Resolution[34] on the health impact of indoor and outdoor air pollution – including some brick kiln pollutants.[35] The Resolution recognises that "air pollution is a cause of global health inequities, affecting in particular women, children and old persons, as well as low-income populations who are often exposed to high levels of ambient air pollution". It also emphasises "the importance of promotion, transfer and diffusion of environmentally sound technologies, particularly to developing countries, to address the health impact of air pollution" and the need to address air pollution as a priority "to protect health and provide co-benefits for the climate, ecosystem services, biodiversity, and food security."

IMPACT OF TRADITIONAL BRICK KILNS ON AIR QUALITY (IN NUMBERS)

1. The brick sector is the third-largest industrial coal consumer in India, using 24 million tons of coal, thereby emitting 78 million tons of CO_2 annually.
2. The industrial sector is one of the largest contributors to black carbon emissions in South Asia, accounting for approximately 23 per cent of all black carbon emissions in the region. In India, the industrial sector accounts for approximately 15 per cent of all black carbon emissions, with approximately two-thirds of those emissions (9 per cent) attributable to brick kilns.
3. The burning of coal (the primary fuel) in the brick industry produces roughly one-third of the total carbon dioxide (CO_2) emissions of the global airline industry which produced about 550 million tons of CO_2.

Source:
1. Carbon War Room (2012). Pathways to efficiency in South Asia Brickmaking Industry's Carbon War Room. Market: Asia; Development Alternatives (2012). Status of Brick Sector In The State of Bihar - A Baseline Study. Delhi.; Pg.10.
2. U.S. EPA (2012). Reducing Black Carbon Emissions in South Asia. Pg.14.
3. Heierli, U., Maithel, S., & Osborn, P. (2008). Brick by brick: the Herculean task of cleaning up the Asian brick industry. Swiss Agency for Development Cooperation, Natural Resources and Environment Division. Pg.22.

Brick kiln, Kathmandu Valley, Nepal
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2.1 Impact of Brick Kiln Air Pollution on Health

There is now a large amount of literature on the impact of brick kilns on urban air pollution[36] and the health effects associated with brick kiln emissions, specifically around respiratory diseases.[37] For example an ILO report on the health of children and youth who have been working in brick kilns in four South Asian countries[38] found that respiratory diseases are one of the health conditions suffered by the children. Some studies have also made the connection between brick kiln air pollution and premature deaths, including research by the World Bank in Bangladesh which found that brick kilns are responsible for 750 premature deaths every year in the country.[39]

2.2 Impact of Brick Kiln Air Pollution on Vegetation and Over Usage of Fertile Soil

Traditional brick making releases harmful gases in the atmosphere, altering the vegetation and affecting soil quality.[40] This can lead to land degradation in areas where there is a large concentration of kilns.[41] A study conducted in India on the banks of Kshipra River found that digging for clay leads to slashing and burning of vegetation at the brick kiln sites, and subsequently results in soil depletion and crop failures.[42]

The effect is long lasting with brick kiln sites becoming barren pieces of land once the operations have ceased.[43] The removal of topsoil in densely populated and rapidly urbanising parts of South and Southeast Asia[44] also has consequences for agricultural production. A study found that each year brick making with agricultural soil leads 110,000 people to suffer due to loss of food grain in the Indian state of Bihar.[45] In addition, black carbon can adversely affect agricultural production by reducing the amount of sunlight that reaches the Earth's surface.[46]

2.3 Impact of Brick Kilns on Weather Pattern Alteration and Climate Change

Through its emission of CO_2 and various type of SLCPs such as black carbon and tropospheric ozone (O3)[47] the traditional brick kilns also impact on the weather patterns of South Asia,[48] affecting for example tropical rainfalls and regional circulation patterns such as the Asian monsoon, which may increase the destructiveness of tropical cyclones.[49] There is also evidence that the release of CO_2 and SLPCs also contributes to regional and global warming.[50]

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[28] Heierli, U., Maithel, S., & Osborn, P. (2008). Brick by brick: the Herculean task of cleaning up the Asian brick industry. Swiss Agency for Development Cooperation, Natural Resources and Environment Division, p. 11.
[29] For example, Carbon War Room (2012). Pathways to efficiency in South Asia Brickmaking Industry's Carbon War Room. Market: Asia; Schmidt, C. W. (2013). Modernizing artisanal brick kilns: A global need. Environmental health Perspectives, 121(8), a242; U.S. EPA (2012). Reducing Black Carbon Emissions in South Asia.
[30] Maithel, S., Uma, R., Bond, T., Baum, E., & Thao, V. T. K. (2012). Brick kilns performance assessment, emissions measurements, & a roadmap for cleaner brick production in India. Study report prepared by Green Knowledge Solutions, New Delhi.
[31] Schmidt, C. W. (2013). Modernizing artisanal brick kilns: A global need. Environmental health Perspectives, 121(8), a242.
[32] Skinder, B. M., Pandit, A. K., Sheikh, A. Q., & Ganai, B. A. (2014). Brick kilns: Cause of atmospheric pollution. Journal of Pollution Effects & Control, 2014.
[33] Carbon War Room (2012). Pathways to efficiency in South Asia Brickmaking Industry's Carbon War Room. Market: Asia.
[34] As reported in http://apps.who.int/gb/ebwha/pdf_files/WHA68/A68_ACONF2Rev1-en.pdf
[35] WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide, Global Update 2005.
[36] Bhat, M. S., Afeefa, Q. S., Ashok, K. P., & Bashir, A. G. (2014). Brick kiln emissions and its environmental impact: A Review. Journal of Ecology and The Natural Environment, 6(1), 1-11. See also Skinder, B. M., Pandit, A. K., Sheikh, A. Q., & Ganai, B. A. (2014). Brick kilns: Cause of atmospheric pollution. Journal of Pollution Effects & Control, 2014. See also Bhanarkar, A.B., Gajghate, D.G., Hasan, M.Z. (2002) Assessment of Air Pollution from Small-Scale Industry, Environ Monit Assess; 80 (2):125-33.
[37] Pariyar, S. K., Das, T., & Ferdous, T. (2013). Environment and Health Impact for Brick Kilns In Kathmandu Valley. International Journal of Technology Enhancements and Emerging Engineering Research, 2(5), 184-187. See also Shaikh S, Nafees A, Khetpal V, Jamali A, Arain A, Yousef A. Respiratory symptoms and illnesses among brick kiln workers: A cross sectional study from rural districts of Pakistan. BMC Public Health. 2012; 12(999).
[38] FPRW-IPEC (2014). A health approach to child labour - Synthesis report of four country studies on child labour in the brick industry / International Labour Office, International Programme on the Elimination of Child Labour (IPEC) - Geneva: ILO.
[39] World Bank. (2011)Introducing Energy-Efficient Clean Technologies in the Brick Sector of Bangladesh. Washington, DC: The World Bank Group. As reported in Schmidt, C. W. (2013). Modernizing artisanal brick kilns: A global need. Environmental health perspectives, 121(8), a242.
[40] Skinder, B. M., Sheikh, A. Q., Pandit, A. K., & Ganai, B. A. (2014). Brick kiln emissions and its environmental impact: A Review. Journal of Ecology and the Natural Environment, 6(1), 1-11. See also Jha, S.K., Nayak, A.K., Sharma, Y.K., Mishra, V.K., & Sharma, D.K.(2008). Fluoride accumulation in soil and vegetation in the vicinity of brick fields. Bulletin of Environmental Contamination and Toxicology 80(4), 369-73.
[41] CCAC (2014). Time to Act: To Reduce Short-Lived Climate Pollutants. UNEP.
[42] Khan, R., and Vyas, H. (2008). A study of brick industries on environment and human health in Ujjain City (India). Journal of Environmental Research and Development., 2(3), January-March. See also: Singh, A.L., and Asgher, Md. S., (2005) Impact of brick kilns on land use/landcover changes around Aligarh city, India, Habitat Int., 29(3), 591-602.
[43] Gupta, S., & Narayan, R. (2010). Brick kiln industry in long-term impacts biomass and diversity structure of plant. Current Science, 99(1).
[44] Ortlepp, R. (2015) Building material substitutes vs. Topsoil harvesting–technical considerations with a focus on developing countries. Pg. 1.
[45] Development Alternatives (2012). Status of Brick Sector In The State of Bihar - A Baseline Study. Delhi.
[46] Ibid. pg. 58; See also, https://www3.epa.gov/blackcarbon/2012report/Chapter2.pdf (e.g. p.17).
[47] Tropospheric Ozone or O3 is known as a secondary gas because it is not directly emitted. It is formed by sunlight-driven oxidation of "precursor gases" such as non-methane volatile organic compounds (NMVOCs) and nitrogen oxides (NOx) that are released when cheap fuel such as plastic, rubber tyres and agricultural waste are burned. In the lower atmosphere, O3 is a potent greenhouse gas and a harmful air pollutant adversely affecting public and ecosystem health. CCAC (2014). Time to Act: To Reduce Short-Lived Climate Pollutants. UNEP.
[48] CCAC (2014). Time to Act: To Reduce Short-Lived Climate Pollutants. UNEP.
[49] U.S. EPA (2012). Reducing Black Carbon Emissions in South Asia. Pg. 18
[50] Ibid. Pp. 8, 18, 54, 56

3. Barriers to Modernising South Asia's Brick Industry

Brick kiln owners and the industry face significant barriers that prevent them from making changes to technology and affect profits and workers' wages. Eight main factors have been identified by various studies[51] as the main barriers to change:

1 **Competition and Labour Shortage:**
In some countries such as India, the booming economy is increasing competition for securing labour as there are new opportunities in other industries. Small-scale brick kiln owners may also lose labour to higher paying larger kilns.

2 **Higher investments:**
Modern and semi-mechanised kilns require more land to set up the kilns as they are larger structures and require new machines.

3 **Absence of proper infrastructure:**
Modern brick kilns require the continuous availability of their main fuel, natural gas, electricity and water. This means the kilns must be near gas lines, power grids and water supplies. In rural areas, such infrastructure is either not available or the resources may be limited or not be fully functioning.

4 **Lack of technical know-how:**
There is limited technical knowledge and availability of off-the-shelf technology packages and a dearth of training opportunities and trained manpower to implement new firing techniques or operate modern machines. This can result in poor quality bricks.

5 **Traditional beliefs:**
There are assumptions that bricks produced using modernised technology will not be as good quality as the traditionally made bricks. This is reflected in the markets where demand for hollow bricks is low because of the lack of awareness and knowledge about the newer technology.

6 **Legal and regulatory framework:**
Policies and laws relating to brick production and the environment are weak and poorly enforced or implemented. As such, brick kiln owners have very little motivation to change their practices.

7 **Lack of financial support:**
Due to the highly unorganised and unregulated aspects of the brick making industry, banks are reluctant to grant loans to brick kiln owners. The bad reputation of the industry and largely documented bad practices and rights violations aggravate the poor credibility of the sector.

8 **Unemployment caused by mechanisation:**
Without the development and promotion of alternative means of livelihoods for the workers, including animal owners, replacing or introducing more mechanised tools instead of manual labour will lead to unemployment of workers who rely exclusively or largely on brick kiln work to make a living.

[51] *Carbon War Room (2012). Pathways to efficiency in South Asia Brickmaking Industry's Carbon War Room. Market: Asia. See also: Heierli, U., Maithel, S., & Osborn, P. (2008). Brick by brick: the Herculean task of cleaning up the Asian brick industry. Swiss Agency for Development Cooperation, Natural Resources and Environment Division.; Maithel, S., Uma, R., Bond, T., Baum, E., & Thao, V. T. K. (2012). Brick kilns performance assessment, emissions measurements, & a roadmap for cleaner brick production in India. Study report prepared by Green Knowledge Solutions, New Delhi. Pg. XXII; and SDPI (2009). Social Analysis of Brick Production Units in Pakistan. Sustainable Development Policy Institute.*

Furnace worker, Greater Noida, Uttar Pradesh, India
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4 Policy and Legal Framework

At the international level, the Kyoto Protocol is a treaty extending to the 1992 United Nations Framework Convention on Climate Change (UNFCCC) that commits State Parties to reduce greenhouse gas emissions, based on the premise that global warming exists and that man-made CO_2 emissions have caused it. India, Pakistan, Nepal and Afghanistan have ratified the Kyoto Protocol and the World Bank has been acting as a trustee for carbon credits sold by brick producers in South Asia through the Clean Development Mechanism.[52] All four countries have also signed the Paris Agreement[53] when it was opened for signature on 22 April 2016 and have submitted intended nationally determined contributions (INDCs) prior to the formal adoption of the Agreement. However none of those countries have ratified the Agreement.

Nationally, the governments of India, Nepal, Pakistan and Afghanistan have taken some steps towards tackling the harmful environmental impact of the brick kilns. India has put in place a limit on emissions depending on the size of the kilns, whilst the Ministry of Environment and Forestry also regulates the height of chimneys and has initiatives to promote energy through market-based mechanisms and fiscal instruments in energy intensive industries.

In Nepal, the registration of new Bull's Trench Kiln has been stopped and the government has set up guidelines for establishing modern and efficient kilns. In Pakistan, under the 1997 Environmental Protection Act (under the Ministry of Environment), anybody causing environmental pollution can be penalised and Environment Protection Orders be issued to brick kiln owners. The North West Frontier Province Environmental Protection Agency has developed Environmental Assessment Checklists & Guidelines for Brick Kiln units (2004). Finally, Afghanistan has been working towards the formulation of Clean Air Regulation (2010) and National Ambient Air Quality Standard (2011) as per WHO guidelines.[54]

However a lack of appropriate personnel, financial restraints and inadequate implementing, enforcing and monitoring mechanisms are currently affecting the impact of those instruments and initiatives undertaken. For example, in 2012 the Supreme Court of India issued a directive for discontinuing the movable chimney kilns and for all brick kilns to conform to new environmental norms. While this decision signalled a move in the right direction - and many brick kilns in Uttar Pradesh were closed for several months in 2013 and 2014 - the majority of them reopened due to lax monitoring mechanisms.

[52] *The Clean Development Mechanism (CDM) allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement an emission-reduction project in developing countries.*
[53] *The Paris Agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C.*
[54] *The agreement is due to enter into force in 2020. See: http://cleanairasia.org/wp-content/uploads/portal/files/presentations/afghanistan_country_presentation.pdf.*

In Pakistan, under the Environment Protection Act of 1997, Environment Protection Orders were issued to 12 local brick kiln owners near Islamabad in 2008 but they were never enforced.[55]

In Nepal in 2002, the 163rd meeting of the Industrial Promotion Board (under Ministry of Industry, Commerce and Supplies)[56] decided to stop the registration of new brick kilns using the traditional Bull's Kiln Technology and to ban the use of the technology by September 2003. The government subsequently developed guidelines for the establishment of modern brick kilns in the Kathmandu Valley and on 12 December 2002, the government decided to allow the registration of brick kilns using new technologies and developed "guidelines" for these kilns.[57] Despite the official decision not to allow the registration of brick kilns using old technologies, these types of brick kilns are still in operation in the Kathmandu Valley, and their number has not decreased.

Bull's Trench Kiln, Nepal

5 Strategies for Change

There is increased evidence that reducing emissions in brick kilns in South Asia in a sustainable manner is a possibility.[58] It is estimated that up to 40 per cent of the 180 million tons of CO_2 emitted by the Asian brick industry could be saved just by switching to more efficient kilns such as the VSBK.[59] Furthermore, energy savings as well as reduction of topsoil depletion could occur with the introduction of hollow bricks.[60] A number of strategies have started to demonstrate that transforming and modernising the industry is feasible.

5.1. Capacity Building and Technical Cooperation

The lack of technical expertise and knowledge on how to do it is one of the key challenges faced by countries. Training and capacity building of relevant stakeholders is therefore a critical approach for paving the way towards more efficient and greener brick production in South Asia.

The CCAC's brick production initiative works to build key understanding, knowledge and capacity to initiate reform in national brick production sectors.[61]

Since the CCAC was established in 2012, six trainings have taken place in Asia, including in India and Nepal. An awareness-raising toolkit as well as training nodes and manuals to help implement proven technologies have also been developed and are shared via an online clearing house.

With support from funding partners and technical experts, a number of countries have also initiated reforms to modernise their brick kilns.

For example, following the 2015 earthquake in Nepal, local and international engineers, architects and experts[62] produced specific guidelines to support the construction of improved kilns and worked with brick kiln owners whose kilns were destroyed to implement them and build kilns which are earthquake resistant, use less fuel, generate lower emissions, and produce better bricks. Technical support was also offered as an incentive to adopt the improved designs.

[55] *Ibid.*
[56] *Supreme Court, Division Bench, Order Writ No.3027 of the year 2059*
[57] *No details about the guidelines were found during the background research to the report.*
[58] *Heierli, U., Maithel, S., & Osborn, P. (2008). Brick by brick: the Herculean task of cleaning up the Asian brick industry. Swiss Agency for Development Cooperation, Natural Resources and Environment Division.*
[59] *Ibid.; and Maithel, S., Uma, R., Bond, T., Baum, E., & Thao, V. T. K. (2012). Brick kilns performance assessment, emissions measurements, & a roadmap for cleaner brick production in India. Study report prepared by Green Knowledge Solutions, New Delhi.; and CCAC (2014). Factsheets about Brick Kilns in South and South-East Asia.*
[60] *Brick by brick: the Herculean task of cleaning up the Asian brick industry.*
[61] *http://www.iclei.org/details/article/who-and-ccac-report-identifies-19-policy-solutions-for-short-lived-climate-pollutants.html*
[62] *These include, the Federation of Nepal Brick Industries (FNBI), its technical branch, the Technology Research and Development Committee (TRDC), International Centre for Integrated Mountain Development (ICIMOD) and MinErgy.*

Fixed Chimney Bull's Trench Kiln, Kathmandu Valley, Nepal

CLEAN AIR AND SUSTAINABLE ENVIRONMENT PROJECT (CASE) – BANGLADESH

The CASE project supported by the World Bank, Development Alternatives (India) and Practical Action (Bangladesh) has launched 20 demonstration projects to facilitate widespread adoption of cleaner and efficient technology by entrepreneurs, motivated by both the economic and environmental benefits. The project is offering expertise and support to set up new technologies such as New Zig Zag Kilns, Improved Zig-Zag Kilns, Vertical Shaft Brick Kilns, Mini Tunnel Kilns or Horizontal Shaft Brick Kilns and Tunnel Kilns.

The project encourages new research for brick alternatives such as micro concrete, and helps the government in strengthening environmental laws to introduce stricter standards and stronger "polluter pays" principles. CASE also provides support to the newly established Air Quality Cell (AQC) for air quality monitoring, data analysis and reporting, and public information and administration. The pilot projects on BTKs to VSBKs have been successful, and the bricks are meeting the country's standards. However, since the implementation of these technologies in Bangladesh is still at a pilot stage their financial viability has not been tested.

Source: http://www.worldbank.org/en/news/feature/2014/07/24/cleaning-dhakas-air-bangladesh; and World Bank (2010). Introducing Energy-Efficient Clean Technologies in the Brick Sector of Bangladesh. Report No. 60155-BD. Environment, Climate Change and Water Resource Unit. World Bank, Washington DC. Pg. 35

5.2 Policy and Advocacy

Increased and strengthened policy and advocacy on the brick kilns and the environment have taken place over the past few years, with in particular the CCAC spearheading the efforts globally and in country. The CCAC's brick production's advocacy focuses on supporting governments in the development and implementation of strategies to modernise their brick making sector using Policy and Advocacy Networks (PAN) that strengthen capacity and coordinate efforts with national governments.

The PAN Asia is implemented by the International Centre for Integrated Mountain Development (ICIMOD) which supports policy change in a number of countries in the region, including India, Pakistan, and Nepal. A first PAN workshop was held in February 2015, leading to the identification of key policy priorities and an action plan.

At the national level, some organisations have also engaged in policy and advocacy on the environmental impact of brick kilns. In India, the Delhi-based Center for Science and Environment (CSE) includes brick production as one of its priorities and aims to foster and support the development of a Roadmap for brick production in the country. In 2015, it led a Policy Dialogue event on short-lived climate pollutants (including in the context of the brick kilns), and produced a 'National Brick Mission Paper'. The document was shared for consultation with a range of stakeholders involved in the brick making industry, including technical experts and government authorities in a workshop in February 2016.

Worker moulding bricks, Lahore, Pakistan

4 THE BRICK KILNS' HUMAN WORKFORCE

1. Human Labour in the Brick Kilns

The brick making industry in South Asia relies on the manual labour of millions of workers. Up to 68 per cent of the 4.4 million to 5.2 million brick kiln workers in South Asia are estimated to be working in bonded and forced labour conditions. Approximately 19 per cent of brick kiln workers documented across the region are under 18 years of age.[63]

WHAT CONSTITUTES ILO'S DECENT WORK?

Decent Work involves: opportunities for work that is productive and delivers a fair income; security in the workplace and social protection for families; better prospects for personal development and social integration; freedom for people to express their concerns, organise and participate in the decisions that affect their lives; and equality of opportunity and treatment for all women and men. It has become a universal objective and has been included in major human rights declarations, UN Resolutions and outcome documents from major conferences.

The core pillars of the Decent Work agenda are set out in four strategic objectives:

1. Set and promote standards and fundamental principles and rights at work that help people to work with freedom, safety and dignity.
2. Create greater opportunities for women and men to obtain decent employment and income by promoting employment-intensive investment and help to formulate employment policy, skills development, job creation, enterprise development and cooperatives.
3. Enhance the coverage and effectiveness of social protection for all so that people have access to health care and income security, particularly in cases of old age, unemployment, sickness, invalidity, work injury, maternity or loss of a main income earner.
4. Strengthen tripartism (through negotiation, consultation and information exchange between different actors; collective bargaining; dispute prevention and resolution) and social dialogue, including corporate social responsibility and international framework agreements to promote better wages and working conditions as well as peace and social justice.

Source: Decent Work – ILO policy impact (http://www.ilo.org/global/topics/decent-work/lang–en/index.htm)

1.1 Bonded and Forced Labour

DEBT BONDAGE (BONDED LABOUR) is defined as "the status or condition arising from a pledge by a debtor of his personal services or those of a person under his control as security for a debt, if the value of those services as reasonably assessed is not applied towards the liquidation of the debt or the length and nature of those services are not respectively limited or defined" (Article 1(a) the UN Supplementary Convention on the Abolition of Slavery, the Slave Trade and Institutions and Practices Similar to Slavery (1956)).

FORCED LABOUR is defined as "all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily (ILO's Forced Labour Convention, 1930 (No. 29).

Despite being prohibited under international law[64] and in countries' national legislation, bonded labour is highly prevalent in the brick kilns in South Asia. The region is thought to have about 89 per cent of the world's bonded labour, of which 15 per cent are estimated to be in the brick kilns.[65] National statistics on bonded labour in brick kilns are scarce but a 2004 survey of brick kilns in the Punjab province of Pakistan found that nearly 90 per cent of brick kilns workers were bonded.[66] This bondage can be attributed to a number of factors, including the informality of the sector in the region, long-standing patterns of inequality, illiteracy, social exclusion and discrimination, as well as deficiencies in labour market governance.[67]

Debt bondage in the brick kilns is characterised by a system of advances. During the non-brick making season, contractors or recruiters who work on behalf of the brick kiln owners scout neighbouring areas or other locations where poverty is rampant for potential workers. Through word of mouth the information on job offers is dispersed and recruiters pay an advance to workers in lieu of their services in the up-coming brick making season. This acts as a security for the kilns owners that there will be a steady flow of workers in the upcoming brick season. In India, a survey of brick kilns in Punjab found that 53 per cent of workers of all ages reported having taken an advance, with brick makers most likely to be bonded.[68] An Indian Supreme Court commissioned study of Tamil Nadu also reported even higher rates of debt bondage, with 80 per cent of kiln workers bonded in the state's Pudukottai district.[69]

Donkey carrying bricks by pack with boy handler, Kathmandu Valley, Nepal

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Although the majority of contracts are verbal, the system of advance coerces the workers and forces them to work more, accept wages most often lower than the national minimum wages, stay until the end of the season, or in most cases, force them to come back the following year to repay the loan.[70] This is because workers feel bound and restricted due to kiln owners' ability to use force,[71] coercion and deception. An ILO study in Afghanistan brick kilns found that 70 per cent of the households interviewed were restricted to take up jobs outside the kiln boundaries until the loan was repaid.[72] Advances and credits therefore become an integral part of the family budget for various household necessities, including marriages and social gatherings.[73]

Furthermore, when the debt taker dies, his debt gets transferred to the next of kin including children or widows. Such inter-generational transference of debt is common to all brick kilns across the region. The dynastic trap is clearly evident from the survey in Afghan brick kilns where 64 per cent of the households had a family history in kilns of 11 or more years. Hence there were large numbers of 18 to 22-year-olds still bonded with their parents in the kilns.[74]

1.2 Child Labour

Under international law, children under 18[75] are prohibited to work in the Worst Forms of Child Labour [1999 (182)], which includes all forms of slavery or practices similar to slavery, such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labour, and work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children.[76] As a result, the work carried out by children in the brick kilns fits into the Convention's prohibited occupations.

Globally, the ILO gives a conservative estimate of around 3.3 million children working in brick kilns,[77] with a large majority in South Asia. A health study on child labour estimated that brick kilns engage about 1.7 million children in India, at least 500,000 in Pakistan, 110,000 in Bangladesh, and 30,000 in Nepal.[78] Another study reported that 56 per cent of brick makers in Afghan kilns of two districts are children, with a majority of 14 years of age or under.[79]

63 *Siddharth Kara 2012 (book-Bonded Labour – Pg.87), quoted in Khan,S and Lyon, S, 2015. "Measuring children's work in South Asia - Perspectives from national household surveys". International Labour Organisation (ILO) and Understanding Children's Work (UCW).*
64 *ILO Forced Labour Conventions No 29 and No 105*
65 *Kara, S. (2009). Sex trafficking: Inside the business of modern slavery. Columbia University Press.*
66 *Hisam, Z., Qureshi, S., Hara, N., Ercelawn, A., Ali, K., Wizarat, S., Ali, B., & Shaukat, Z. (2010). Labour Rights in Pakistan, Declining Decent Work and Emerging Struggles. Pg. 93.*
67 *Mishra, L. (2011). Human Bondage: Tracing Its Roots in India. SAGE Publications India. Pg. 14.*
68 *Srivastava, R.S. (2005). Bonded labour in India: Its incidence and Pattern, Working Paper 43, ILO. Citing Ateeq, Nasir & J. John. Migrant Labour in the Brick Kilns of Punjab. In G. Iyer (ed.) Migrant Labour and Human Rights inIndia. New Delhi: National Human Rights Commission, 2003.*
69 *Ibid.*
70 *Thomson, K., Mohammed, A., Sundaray, S., Akerkar, S., & Daniel, U. (2005). Bolangir to Hyderabad and the politics of poverty – The choice of death in paradise or life in hell. ActionAid International.*
71 *Force often refers to the threat or use of verbal or physical punishment – examples of deception would include, kiln staff purposely underestimates the number of bricks produced or to minimise costs or manipulate debts and repayments. ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan. Pg. 33.*
72 *ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan. Pg. 33.*
73 *Guerin, I., & Venkatasubramanian, G. (2009). Corridors of migration and chains dependence: brick kiln moulders in Tamil Nadu.*
74 *Ibid. Pg. 57*
75 *Hazardous work - Any work which is likely to jeopardize children's physical, mental or moral health, safety or morals should not be done by anyone under the age of 18. Basic Minimum Age - The minimum age for work should not be below the age for finishing compulsory schooling, which is generally 15.*
76 *The other two categories under "the worst forms of child labour" are:*
(b) the use, procuring or offering of a child for prostitution, for the production of pornography or for pornographic performances;
(c) the use, procuring or offering of a child for illicit activities, in particular for the production and trafficking of drugs as defined in the relevant international treaties. http://www.ilo.org/public/english/standards/relm/ilc/ilc87/com-chic.htm
77 *FPRW-IPEC (2014). A health approach to child labour - Synthesis report of four country studies on child labour in the brick industry / International Labour Office, IPEC - Geneva: ILO. Pg. 4.*
78 *Ibid.*
79 *ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan*

Young women carrying bricks.
Kathmandu Valley, Nepal
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Children stacking bricks.
Ambapur, Gujarat, India
© 2017 The Donkey Sanctuary

Woman and children outside their temporary house, Greater Noida, Uttar Pradesh, India
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Although most of the South Asian countries have 14 as the minimum age for labour, children as young as 5 or 6 are involved in some of the work.

There are two categories of children involved in brick kiln work: children with families and unaccompanied children. Children commonly migrate to the kiln sites with their families and either work with their parents or help with household chores such as taking care of siblings and preparing food while their parents are working.[80] Seasonal work poses a challenge for these children's education as they may have to leave their schools and not have access to other educational opportunities in or near the kilns.

Unaccompanied children include children who travel daily from their villages to work as well as children who leave their families and spend the season working on site. There are also older children who come individually or with friends to earn money for themselves or for their household.[81] Without their family, those children are more vulnerable than those living in communities outside the kilns.[82]

1.3 Women Workers

Although rarely identified as a separate group facing specific issues, women and young women are very often part of the workforce in the brick kilns. They are rarely, if ever, directly acknowledged as labour (for example as recipients of advances and compensation), except when they are liable to pay for their husbands' or fathers' outstanding debts.[83]

Women are exposed to physically demanding tasks including during pregnancy, leading to significant risks to their babies and their own health. They are also extremely vulnerable to violence, abuse and sexual harassment. Research across Nepal, India, Pakistan and Bangladesh, labourers found that brick kiln owners often took sexual favours from the wives or daughters of bonded labourers as payment for advances of food and clothing.[84] Although research on the issue is limited, examples of sexual violence and abuse against women in the brick kilns are commonly reported in national news.

[80] *Ibid.*
[81] *Based on interviews with stakeholders from The Donkey Sanctuary India and Animal Nepal.*
[82] *FPRW-IPEC (2014). A health approach to child labour - Synthesis report of four country studies on child labour in the brick industry / International Labour Office, International Programme on the Elimination of Child Labour (IPEC) - Geneva: ILOPp. xiv, 49.*
[83] *Pakistan Institution of Labor Education and Research. (2004) Unfree labor in Pakistan: Work, debt and bondage in brick kilns. Working Paper No. 24. Geneva: International Labor Office. Pg. ix.*
[84] *Kara, S. (2014). Bonded labor: Tackling the system of slavery in South Asia. Columbia University Press. Pg. 91.*

2. Living Conditions

Workers' living conditions reflect the precarious nature of their work and tend to be similar across the region. When they do not commute daily from their villages, workers usually reside in large compounds in self-constructed and temporary low ceiling structures made of unbaked bricks and a tin roof.[85] All family members stay together in one shelter and in some cases, share the space with their animals.

A study in Pakistan[86] found that over 60 per cent of workers are below the poverty line and live onsite in kutch/pucca houses made of bricks and mud. Eighty per cent have no running water at home, 60 per cent have no latrine facilities, 82 per cent do not have proper drainage.

Due to poor shelter facilities, workers endure extreme weather conditions.[87] The brick making season usually starts in the peak of winter, especially in Nepal, Pakistan, Afghanistan and the northern part of India, and goes on until May when temperatures are at their highest. Lack of protective clothing and insufficient warm bedding supplies lead to frequent illnesses in winter while in summers workers are exposed to extremely high temperatures.[88]

Workers and their families have been found to be food insecure[89] and cannot afford a nutritious diet, leading to micronutrient deficiencies which is particularly detrimental to children's development.

[85] *Fire-controllers and managers may not reside onsite. However they are still exposed to the similar working conditions as all the other workers.*
[86] *SDPI (2009). Social Analysis of Brick Production Units in Pakistan. Sustainable Development Policy Institute.*
[87] *Ibid.*
[88] *Kara, S. (2014). Bonded labor: Tackling the system of slavery in South Asia. Columbia University Press.*
[89] *FPRW-IPEC (2014). A health approach to child labour - Synthesis report of four country studies on child labour in the brick industry / International Labour Office, International Programme on the Elimination of Child Labour (IPEC) - Geneva: ILO; and ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan.*

Furnace worker. Sukkur, Pakistan
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3 Working conditions

The construction industry, including brick making, has been categorised by the ILO as dangerous and hazardous.[90] The difficult and risky working conditions of adults and children are heightened by the informality of the sector and its lack of regulatory, legal, and institutional frameworks. Illegal migration heightens workers' vulnerability to poor working conditions as the entire practice of recruitment is a 'clandestine' affair.[91]

3.1 Low Wages and No Benefits

The piece-rate system dictates the payment of wages which are much lower than the country standards (if any). Wages are paid daily, weekly, or monthly. In the case of children, it has been reported that they are often paid less than what they were promised. Because of the system of advances, workers have virtually no bargaining power for higher wages.[92] Workers are also usually unaware of their rights and entitlements, and are therefore not able to negotiate for better wages. They do not receive any benefits such as social security and are invisible in official systems as a large majority, and in particular women, do not have national identity cards.

3.2 Long Working Hours

Labourers, including children, can work six days a week and up 12-16 hours every day although working hours may be even longer if they are pressured to fulfil their quotas.[93] In many cases they are not entitled to leave or holidays although at times local workers who have low debts may get permission to leave for personal business as they do not have to travel far. Migratory families have limited or no opportunities to have leave as they need more time to travel due to the distance to their own villages.[94]

3.3 Limited or No Access to Healthcare

Brick kilns are primarily based in remote rural or peri-urban locations and tend to be far from healthcare facilities. When healthcare services are available, they rarely cater for migratory workers because the host location does not have the capacity to deal with the seasonal influx of population.[95] As a result, when suffering from an illness or injuries, workers either self-medicate or if they can afford it (although this is very rare), they visit private practitioners. In other cases, they turn to unqualified doctors who put them at great risk of injury and even death.[96]

4 Health and Welfare Implications

4.1. Occupational Health

In addition to the numerous negative health effects of the pollutants and the dusty environment, workers' health is also affected by the highly dangerous and demanding nature of the tasks they perform. Common health problems include backaches, leg pains and joint pains due to their working posture.[97] Children are also at a higher risk of receiving bruises and injuries and of suffering from gastro-diseases, lung infections, stunted growth, fatigue, exhaustion, lack of sleep and joint and muscle pain.[98] The extreme cold and hot temperatures in which labourers work can also adversely affect their health as they are not provided with weather-appropriate clothing.

4.2. Occupational Hazards

Workers do not have any safety gear such as protective helmets, thick gloves and work shoes. They are also not provided with suitable equipment to perform some of the dangerous and physically demanding tasks. For example, baskets are rarely provided to carry bricks, with rags and ropes being used instead. Many children and adults work barefoot despite the uneven terrain while men working on top of the ovens with exceedingly high temperatures often wear flip-flops.[99] A study of 93 workers working in five kilns in Pakistan found that fracturing and deaths occur due to falls from the carts or kiln roof. Workers also reported that a child fractured his leg and another person died due to a snake bite during the period of the study.[100]

An ILO research[101] categorised the main occupational hazard in the brick industry of Afghanistan, Pakistan and Nepal as follows:

- SAFETY HAZARDS (e.g. wet or uneven surfaces, motorised equipment, cutting or power tools, vehicles).
- CHEMICAL HAZARDS (e.g. exposure to smoke, fibres, exhaust, mineral dust or toxic chemical agents).
- PHYSICAL HAZARDS (e.g. noise, vibration, exposure to heat and cold, electricity, poor ventilation).
- ERGONOMIC HAZARDS (e.g. lifting/moving heavy objects, repetitive motions, awkward postures).
- BIOLOGICAL HAZARDS (e.g. contact with biological wastes, noxious plants or animals).

90 *ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan. Pg 4.*
91 *Mishra, L. (2011). Human Bondage: Tracing Its Roots in India. SAGE Publications India.*
92 *ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan. Pg 12.*
93 *FPRW-IPEC (2014). A health approach to child labour - Synthesis report of four country studies on child labour in the brick industry / International Labour Office, International Programme on the Elimination of Child Labour (IPEC) - Geneva: ILO.*
94 *Pakistan Institution of Labor Education and Research. (2004) Unfree labor in Pakistan: Work, debt and bondage in brick kilns. Working Paper No. 24. Geneva: International Labour Office. Pg. 19.*
95 *Archana, S., Silan, V., & Kant, S. (2014). Maternal healthcare and perinatal mortality among brick kiln migrant workers: A case study. National Medical Journal of India, 27(5), 280-282.*
96 *Ibid.*
97 *Cited in N. Ambreen et al (2012). Status of Occupational Health and Safety in Brick Kiln Industries at Hatter Industrial Estate Haripur, Pakistan. Journal of Environment (2012), Vol. 01, Issue 02, pp. 56-63.; and ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan.*
98 *FPRW-IPEC (2014). A health approach to child labour - Synthesis report of four country studies on child labour in the brick industry / International Labour Office, International Programme on the Elimination of Child Labour (IPEC) - Geneva: ILO.*
99 *Interviews with stakeholders and N. Ambreen et al (2012). Status of Occupational Health and Safety in Brick Kiln Industries at Hatter Industrial Estate Haripur, Pakistan. Journal of Environment (2012), Vol. 01, Issue 02, pp. 56-63.*
100 *Ibid. Pg. 60.*
101 *FPRW-IPEC (2014). A health approach to child labour - Synthesis report of four country studies on child labour in the brick industry / International Labour Office, IPEC - Geneva: ILO. Pg. 13.*

4.3. Psychological Health and Physical Abuse

The psychological implications of working in the brick kilns are significant and are made greater due to the trap of debt bondage. Families may have no choice but to resort to extreme measures which increase the psychological effects of being in an extremely vulnerable situation. These include selling land or jewellery,[102] but also body parts[103] or in some cases their children[104] to supplement their income and survive.

The psychological impact of working in the kilns on children has been documented in a number of studies. A study in Afghanistan, Pakistan, Nepal and Bangladesh found that children working in the kilns were seven times more likely to feel mistreated than those who do not do this work.[105] Another study[106] in Afghanistan showed that more than half of the children involved in the research felt stressed because of the long working hours and heavy loads. More than 80 per cent of them also did not feel proud of their work and lacked self-esteem and two-thirds felt that they did not have the right to choose or control their lives.

4.4. Maternal Health and Newborn Care

As a result of the demanding tasks they have to perform and the lack of adequate and accessible health facilities, pregnant women living and/or working in the brick kilns are vulnerable to difficult pregnancies and deliveries. In a study conducted among brick kiln workers in Faridabad, Haryana, India, more than half of the mothers (57.1 per cent) reported that they had home delivery in the brick kilns or in their native place,[107] and that the chances of a healthy delivery among migrant women in the brick kilns were low because of poor ante and postnatal health services. In many cases there is a delay in identifying complications and in reaching appropriate health facility, and there is no adequate post-natal care available.[108]

5. Policy and Legal Framework

Internationally, a number of instruments are of direct relevance to men, women and children working in the brick kilns. They include the UN International Covenant on Economic Social and Cultural Rights (ICESCR) which provides all human beings with a right to work in decent, safe and healthy conditions (Article 7) as well as fair remuneration. It also states workers' rights to form and join trade unions (Article 8), to social security (Article 9) and to adequate standards of living (Article 11). Finally, it guarantees human beings with a right to health (Article 12) and a right to education (Article 13). The ILO's fundamental Conventions also apply to the brick kilns and include the Convention on Forced Labour (no. 29), the Convention on the Abolition of Forced Labour (No. 105) and the Convention on the Worst Forms of Child Labour (No 182). All countries in this report (Afghanistan, India, Nepal, and Pakistan) have ratified those three Fundamental Conventions and the ICESCR, with the exception of India which has not ratified ILO's Child Labour Convention.

It is worth noting that the UN and the Organisation of Economic Cooperation and Development (OECD) have introduced guidelines for multinationals stating that companies buying bricks from factories violating human rights should have direct responsibility for human rights abuses anywhere in their supply chains.[109]

At the national level, countries have laws applicable to human labour in the brick kilns. Pakistan prohibits bonded labour and requires brick kilns to be registered with the government as formal employers, which in theory allows workers to access retirement and other benefits. The law also sets up District Vigilance Committees to ensure implementation and rehabilitate released bonded labourers. The country also has a number of legal provisions set out in the Factories Act 1934 which relates to the working conditions and health and safety of brick kiln workers, as well as the fixation and implementation of minimum wages.

India also prohibits bonded labour but does not have any instruments regulating brick kilns which are considered part of the informal sector and operate without oversight.

Women carrying bricks to the furnace, Kathmandu Valley, Nepal
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However the Constitution includes a number of provisions applicable to the industry.

Nepal's new Constitution[110] contains a number of articles of direct relevance to human labour in the brick kilns, such as the prohibition of exploitation, bonded and forced labour. Finally Afghanistan's Constitution prohibits bonded labour but the country does not have laws that specifically address it. The Afghan Labour Law does address compulsory work which would be applicable in those cases of bonded labour that can also be deemed forced labour and prohibits the engagement of women in employment that is physically arduous or harmful to health.

With regards to child labour specifically, Pakistan, India and Nepal all prohibit the employment of children below the age of 14 in hazardous occupations, including brick kiln factories. Afghanistan does not have a specific policy on child labour but the Afghan Labour Law establishes 18 as the minimum age for adult work and prohibits children aged 15 to 17 from working if the work is physically arduous or poses a health or safety risk and is more than 35 hours a week. It is argued brick making would fall under this category of prohibited work. In Nepal, the Ministry of Women, Children and Social Welfare (MWCSW) has also set standards for registering brick kilns. Each kiln must have a certified school for children of kiln workers to attend, distribute nutritious food, and provide decent living conditions.

However, as in the case of the environment, the implementation and enforcement of policies and laws is weak or absent with key factors such as a lack of adequate institutional arrangements, inspection and monitoring systems, and insufficient trained personnel and resources, impacting on the capacity of governments to act. The informal illegal nature of the sector, low or absent awareness about the legislation and policies also contribute to a weak enabling environment, aggravated by political instability in some countries.

[102] *Based on interviews with stakeholders.*
[103] *Pakistan Institution of Labor Education and Research. (2004) Unfree labor in Pakistan: Work, debt and bondage in brick kilns. Working Paper No. 24. Geneva: International Labour Office.*
[104] *Kara talks of anecdotal stories about extremist groups recruiting young children from brick kilns. He explains that extremists in Pakistan and India capitalize on rural poverty, anger and lack of opportunity to secure young recruits for their causes. They possibly even pay off debts of many families as well and give such families means to fight back exploitation. There is no evidence on this; however Kara reflects it's a strong possibility. Kara, S. (2014). Bonded labor: Tackling the system of slavery in South Asia. Columbia University Press. Pg. 95.*
[105] *FPRW-IPEC (2014). A health approach to child labour - Synthesis report of four country studies on child labour in the brick industry / International Labour Office, IPEC - Geneva: ILO. Pg. 65.*
[106] *ILO (2011). Buried under Bricks – A Rapid Assessment of Bonded Labour in Brick Kilns of Afghanistan.*
[107] *Archana, S., Silan, V., & Kant, S. (2014). Maternal healthcare and perinatal mortality among brick kiln migrant workers: A case study. National Medical Journal of India, 27(5), 280-282.*
[108] *Ibid.*
[109] *http://www.bbc.com/news/world-asia-india-25556965, Accessed on 13.12.2015*
[110] *http://www.inseconline.org/linkedfile/Bill%20Of%20Constitution%202015%20Sept.pdf*

6. Strategies for Change

The issues of human labour in the brick kilns are complex, multi-layered and influenced by a number of socio-economic and cultural factors. A number of successful and replicable strategies have been implemented across the region with a view to addressing some of the critical causes of vulnerability and poor labour conditions in the brick kilns.

6.1 Workers' Rights Awareness Raising and Capacity Building

One of the primary reasons for labour exploitation in South Asia is that workers are often unaware of their rights. An increasing number of projects have focused on building workers' awareness of their entitlements and their capacity to organise themselves to negotiate with brick kiln owners and secure better working conditions.

For example in Pakistan, ActionAid's "Support social protection and decent work of brick kiln workers and bonded labourers in Pakistan" (SPARC) programme which was implemented with the support from the European Union in three districts in Punjab and three districts in Sindh led to workers' being able to secure social security services,benefits and minimum wages to which they were entitled, including the provision of social security cards giving them access to free medical treatment and other benefits.[111] In India, a number of projects have also led to workers being able to bargain for an increase in wages, reducing extreme exploitation.[112]

6.2 Technical Assistance

Technical assistance to support governments in strengthening their capacity to develop and implement bonded and child labour policies and programmes has also led to some positive changes in the industry in some countries. In particular, Decent Work Country Programs (DWCP) supported by the ILO have been critical in increasing policy makers and implementers' technical knowledge and capacity to implement programmes benefiting brick kiln workers, including children.

The DWCPs in Afghanistan, India, Nepal and Pakistan train key stakeholders to increase their capacity to address bonded labourers' legal and social needs. In Pakistan for example, as a result of the DWCP, the government of Punjab province stepped up its action on prohibiting child labour in the brick kilns by disseminating the Punjab Prohibition of Child Labour at Brick Kilns Ordinance 2016 which aims to eliminate child labour at brick kilns through an extensive inspection and monitoring mechanism.[113] The ILO also helped to raise the profile and visibility of the trade unions in the informal sector of Pakistan leading to the formation of a Brick Workers' Trade Union in the Punjab Province.[114] In India, the Ministry of Labour and Employment took significant steps to reduce vulnerability to bonded labour with a special focus on brick kiln workers. Working with brick kiln owners, the government secured the registration of 11,823 brick kiln workers under the 'Building and Other Construction Workers Welfare Board', with nearly 3,000 of whom now have access to health security coverage under a government sponsored scheme. It also secured the enrolment of over 2,000 children in 113 worksite schools and improved living conditions for the workers (e.g. construction of houses, toilets and water tanks).

6.3. Policy and Advocacy

Policy and advocacy has also been one of the key approaches used by NGOs and UN agencies to foster long term changes in the brick kilns. Efforts have primarily been aimed at securing the effective implementation, monitoring and enforcement of labour laws and policies specific to or relevant to the brick kilns settings. For example, in 2012, ILO and UNICEF facilitated discussions on the development of a draft Strategic Program Framework for the elimination of bonded and child labour in brick kilns in Afghanistan. The Framework was finalised and implementation followed although it is unclear what the status of implementation is.

Initiatives by international and national organisations including trade unions and NGOs have also focused on securing positive changes to the living and working conditions of workers including children. For example Building and Wood Worker's International has engaged in advocacy around unions and child labour and the implementation of ILO's standards. The Blood Brick Campaign, implemented by a coalition of organisations has focused on advocating for the improvement of the labour legal frameworks in India and securing changes amongst companies in the demand and supply side of the industry. The Campaign has also contributed to raising the visibility of the industry and the challenges and conditions faced by workers.

[111] *http://www.actionaidusa.org/sites/files/actionaid/brochure-projects.pdf Accessed on 17.06.2016*
[112] *See for example projects implemented by Prayas Centre for Labor Research and Action http://www.clra.in/files/documents/Ajmer-brick-kiln-workers-struggle.pdf; Accessed on 18.03.2016 http://www.clra.in/files/documents/Gujarat-brick-kiln-workers-struggle-2011.pdf; Accessed on 18.03.2016 http://www.clra.in/files/documents/briks-kilns-strike-2010-review.pdf Accessed on 18.03.2016*
[113] *http://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_467647.pdf Accessed on 17.06.2016*
[114] *http://www.ilo.org/islamabad/areasofwork/workers-and-employers-organisations/lang--en/index.htm Accessed on 17.06.2016*

Mule carrying bricks by pack, India

5

THE BRICK KILNS' ANIMAL WORKFORCE

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Top: Animals loaded in trucks at Dewa equine fair, India
Middle: Overloaded donkey resting, India
Bottom: Donkey cart, Lahore, Pakistan

Donkeys, mules, and horses are commonly used in the construction industry in South Asia. These "beasts of burden" work in the brick kilns across India, Pakistan, Nepal and Afghanistan and have a key role in the brick production value chain. Animals are much cheaper and more efficient than using small trucks or other mechanised vehicles. They are also often better suited to the uneven and ever-changing terrain at the kiln sites.

Around 380,000 animals[115] are estimated to be working in the kilns in India[116] and more than 115,000 in Pakistani brick kilns.[117] About 6,900 working equine animals are found in the brick kilns provinces of Kabul, Herat, Mazar and Nangharar in Afghanistan,[118] while there are more than 2,200 of them in Nepal, the majority of which are working in the Kathmandu Valley.[119]

Working animals provide a means of livelihoods for their owners and handlers. The income they generate often represents their main source of revenue for the year. A survey carried out by Brooke India in 2013 across 50 brick kilns in 10 districts of Uttar Pradesh found that overall 80 per cent of the total annual income earned by equine owning families in the brick kilns was generated by their working animals through the transport of bricks, and 20 per cent from other sources. For 23.5 per cent of equine owners, the work from working equines during the brick kiln season was their only source of income.[120]

There is only limited data on the use of donkeys, mules and horses and their welfare in the kilns as they are virtually invisible from the literature and published evidence[121] on the industry in South Asia. This is reflected in the limited number of studies and evaluations which largely come from animal welfare organisations working in the brick kilns.[122]

[115] In the absence of official data, the figures provided are based on the programme coverage of animal welfare organisations working in the brick kilns and may not include a number of areas where brick kilns may use animals.
[116] Source: Brooke India and The Donkey Sanctuary India.
[117] Source: Brooke Pakistan.
[118] Source: Dutch Committee for Afghanistan.
[119] Source: AHTCS and Animal Nepal.
[120] Kandpal, D. K., Zaman, S. F., and Kumar, A. (2014); Study on the contribution of equids to the livelihoods of landless people in Indian brick kilns, Presented at the 7th International Colloquium on Working Equids, London, UK, 1st – 3rd July 2014.
[121] Pritchard J. (2010); Animal traction and transport in the 21st Century: Getting the Priorities Right, The Veterinary Journal, Volume 186(3), pages 271-274.
[122] The limited data available including in relation to the use of animals in the brick kilns should not lead to assumptions that there are no issues with animals in the brick kilns but be seen as a primary example of the animals' invisibility and their contribution to society/economy.

1. Source of the Animal Workforce

The animals used in the brick kilns either remain all year long with their owners and they are being used for other income generation activities and/or domestic chores during the non-brick kiln seasons, or they are bought from equine fairs specifically for the brick kiln season.

Animals travel nationally and regionally to be used in brick kilns. In India more than 80 per cent of donkeys, horses and mules migrate to brick kilns within or outside a district.[123] In Nepal most animals used in the brick kilns come from India.[124] They are purchased from Nepalgunj on the border of India or from traders in India's equine fairs at Barabanki in the state of Uttar Pradesh and Sonapur in the Bihar state. They are then transported to Nepalgunj. Many of those animals are "leftover animals" that have not been bought by anyone else by the end of the fair, often because of their poor condition. Local communities buy them from traders using the advances received from the contractors.[125]

As the India-Nepal border is an open border, most working equine animals, including those who are not fit for work, cross without any health or welfare checks. There is also a lack of appropriate inspections and holding facilities by the Nepalese Quarantine office in Nepalgunj[126] and many animals are brought illegally into India at night when the office is closed. In a large majority of cases, animals are inspected in the trucks and are provided with a fake health certificate. As a result, animals can travel to other parts of Nepal to work in the kilns even if they are not fit enough. The issue of fake health certificates and illegal border crossing also exposes the animals to disease outbreaks such as Glanders - a highly contagious zoonotic and fatal equine disease[127] - in other countries.[128]

The transport of working equine animals is also commonly inadequate. It often results in fractures, wounds, other injuries, and in the worst cases, death, as the animals are packed in the back of trucks, mishandled, and they are not provided with food or water during the journey.[129] Unloading and loading of animals from trucks also leads to a number of injuries including fractures and deep open wounds as well as intense stress and fear.[130] They therefore arrive in the brick kilns in an extremely vulnerable state and a high number of them are unfit to work.

2. Characteristics of Animals Used in Brick Kilns

Traditional brick kilns in South Asia rely on donkeys, mules and horses but the species and sex of the animals used vary between kilns and between countries.[131] A number of factors influence the animal owners or traders' choice when it comes to the kind of working equine animal they use, one of the most important ones being the financial aspect. Prices for a donkey vary between US $70 and $175 on average across India, Pakistan and Nepal, whilst horses and mules can be bought for anywhere between US $600 and US $1,000 on average.[132] The price of an animal is heavily influenced by its health and body condition. The poorer its condition the cheaper it will be. Other factors include the competency of the buyers to select the animals, perceptions and misconceptions about the animals' work capacity and maintenance requirements, and the brick kiln owners' preferences.[133]

[123] Brooke India. (2010), Review and Reflection, The Brooke India Direct Operations: 2009 – 2010.
[124] Tewari, S. (2016). Cross-Border Trafficking of Humans and Animals in South Asia. The Brooke. Unpublished Research Report. Information also received from The Donkey Sanctuary India, Brooke India, Brooke Pakistan, AHTCS, Animal Nepal, and Dutch Committee for Afghanistan.
[125] Animal Nepal and AHTCS's internal reports.
[126] Quarantine office is a government structure dealing with animal import and export. The office is responsible for checking all the standards that should be followed during transportation; importing and exporting of animals, livestock production input materials and livestock products. It is also responsible for providing health certificates of the animal during transportation to other places.
[127] A zoonotic disease is a disease that is naturally transmissible from vertebrate animals to humans and vice-versa.
[128] Malik, P., Singha, H., Goyal, S.K., Khurana, S.K., Tripathi, B.N., Dutt, A., Singh, D., Sharma, N., Jain, S. (2015) Incidence of Burkholderia mallei infection among indigenous equines in India, Veterinary Record Open 2015;2:e000129 doi:10.1136/vetreco-2015-000129.
[129] Source: http://www.theasiamag.com/perspectives/field-notes/born-burden. The trucks used to transport the animals are commercial cargo carriers and are not designed for carrying livestock and drivers are not trained to handle the animals.
[130] Source: Brooke India and Brooke Pakistan – based on programmatic work and welfare assessments in the fairs.
[131] The Donkey Sanctuary India, Brooke India, Brooke Pakistan, AHTCS, Animal Nepal, Dutch Committee for Afghanistan.
[132] The Donkey Sanctuary India, Brooke India, Brooke Pakistan, AHTCS, Animal Nepal. Based on the lead author's calculations.
[133] Internal reports from NGOs. Unpublished.

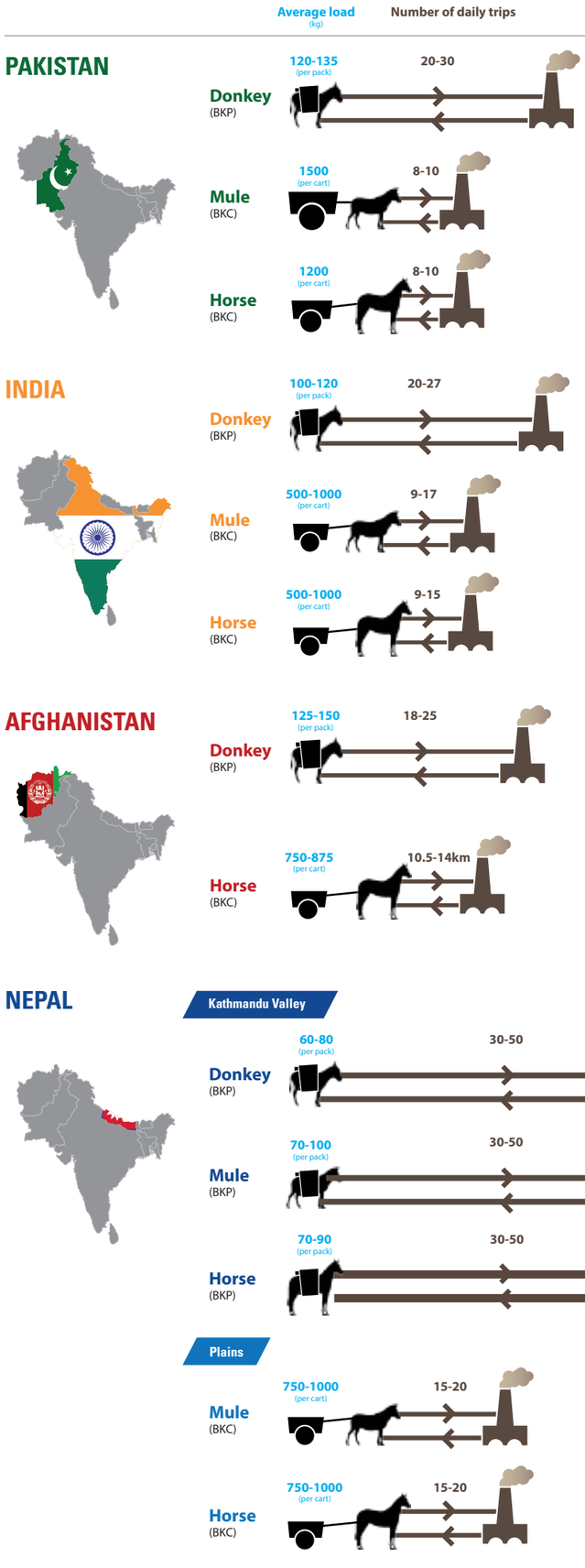
Donkey overloaded bricks on its way to the furnace. Kathmandu Valley, Nepal

Donkeys tend to be widely used and popular in the brick kilns[134] but they also tend to be the most neglected.[135] This is due to the poverty of their owners who cannot afford a mule or a horse, the fact that donkeys tend to be tougher and more resilient than horses and mules, and that their responses to pain are less obvious.[136] They are also considered low maintenance compared to mules or horses.[137] In addition, since children are often in charge of handling the animals, donkeys are seen as more manageable and controllable through the use of sticks and whips.

A Donkey Sanctuary India study on the link between animal welfare and socio-economic conditions of their owners showed a direct correlation between poverty and poor welfare.[138] Three different groups of working equine animals were included in this study. Group I consisted of donkeys, mules and horses working at brick kiln sites; group II animals worked at stone quarries, and group III worked at city sites. Twenty-five animal owners from each group were selected and interviewed and animals were assessed.[139] The study found that group I (brick kilns) and II (stone quarries) owners possessed mostly donkeys, followed by mules and horses, mainly due to the cheap cost of donkeys. Group I also had the least knowledge about management practices and the animals assessed had the lowest welfare outcomes.

The age of the animals used in the brick kilns can vary and it is not uncommon to use young animals. A welfare assessment undertaken by Brooke's partner in Nepal showed that 32 per cent of the assessed animals were young (below 3.5 years old) and included foals.[140] The life expectancy of working animals in the brick kilns is largely influenced by their living and working conditions. It rarely exceeds 15 years for mules and horses, and tends to be shorter for donkeys. In Nepal, donkeys may not last more than one season due to their extreme poor health when they are bought and their mistreatment in the kilns.

[134] *Ibid.*
[135] *Based on animal welfare assessments conducted in brick kilns.*
[136] *The Brooke (Eds). (2010). The 6th International Colloquium on Working Equids: Learning from Others. Proceedings of an International Colloquium held in New Delhi, India. The Brooke. Pg. 37.*
[137] *Based on interviews with stakeholders in Nepal, Pakistan and India.*
[138] *Kumar, R. S.,Tomar, R., Kumar P., Nath, S.,Murugan, G., and Ramesh, S., Comparison of different working equine communities: Their animal welfare and socio-economic status in Gwalior, The Donkey Sanctuary India.*
[139] *A list of animal health and behaviour parameters was devised and a range of indicators was selected including body score condition, wounds, lameness, diseases and temperament and behaviour. The owners were interviewed about their animal management practices including sheltering, feeding, working patterns and harnessing, as well as their income. Their economic status was assessed according to their children's education and living standards.*
[140] *The assessment was conducted in the brick kilns of Banke and Bardiya districts in May 2013. A total of 210 animals were assessed across 18 brick kilns.*
[141] *Information based on work of Brooke and The Donkey Sanctuary in brick kilns.*



BKP - Bricks by Pack
BKC - Bricks by Cart

2.1. Roles of Animals in Brick Kilns

The bulk of the donkeys, mules and horses' work generally consists of transporting wet and dry bricks by cart (BKC) or pack (BKP) within the kilns, and from the brick kilns to external locations for use in the construction industry.

The table below provides an overview of the working patterns, including the average load by equine species, the number of trips daily, and the type of transport used in the countries using animals in the brick kilns.[141]

Brick kiln donkeys being unloaded, Mehsana, India
© 2017 The Donkey Sanctuary

3. Living Conditions and Health Implications

Brick kilns have been identified as one of the main work types that lead to more welfare problems for donkeys, mules and horses than any other sectors.[142] The range, patterns and severity of the health and welfare problems vary between kilns within a country and between countries.

The living conditions of the animals make them particularly vulnerable to poor health and welfare. They often live in small and temporary shelters where numerous animals are crowded with little or no space to move, no ventilation, no windows and dirty conditions. This leads to a number of health conditions including fly borne diseases and hoof problems.

Animals also have no access to clean water and are rarely given water during the day. They also do not get opportunities to graze and are underfed for the work they do.[143] Poor diet, inadequate feeding time, and intermittent access to water make them prone to colic and other intestinal problems.[144]

When not working, it is common practice to tether the animals so that they do not stray or for convenience. They therefore do not have an opportunity to stretch, roll and interact with other animals. Tethering can also lead to entanglement and can cause severe wounds on the animals' legs.

WHAT IS ANIMAL WELFARE?

The concept of Animal Welfare is relatively recent and is frequently explained with reference to the Five Freedoms which were first proposed in Britain by the Farm Animal Welfare Council in the 1960s. They have been adopted as the main reference for defining "animal welfare" throughout the world including by the World Organisation for Animal Health (OIE). The Five Freedoms refer to physical, mental and emotional conditions which humans have influence over, and acknowledge animals as sentient beings, a status that has only recently recognised in a handful of countries.

They are:

- Freedom from Hunger and Thirst: by providing enough fresh water and the right type and amount of food to keep them fit.
- Freedom from Discomfort: by providing an appropriate environment including shelter and a comfortable resting area.
- Freedom from Pain, Injury or Disease: by preventing them from getting ill or injured and by making sure animals are diagnosed and treated rapidly if they do.
- Freedom to Express Normal Behaviour: by making sure animals have enough space, proper facilities and the company of other animals of their own kind.
- Freedom from Fear and Distress: by making sure their conditions and treatment avoid mental suffering.

[142] *Burn, C.C., and Dennison, T.L. and Whay, H.R. (2010). Environmental and demographic risk factors for poor welfare in working horses, donkeys and mules in developing countries. Veterinary journal, 186 (3). pp. 358-92.*
[143] *Rao, R. K., Agrawal T., Ravikumar, R. K., and Gupta, S. R. (2010). Working equine feeding practices in Uttar Pradesh, India: with specific reference to horse and mule*
[144] *See for example, Khan, S., (2004). Donkey management and utilisation in Peshawar, Pakistan, published in Starkey, P. and Fielding, D. (eds), Donkeys, people and development, Animal Traction Network for Eastern and Southern Africa (2004)*

3.1 Working Conditions and Health Implications

The severity of the working conditions varies between kilns and countries– with some of the worst ones seen in Nepal. A number of common causes of poor health and welfare across India, Pakistan, Nepal and Afghanistan have been identified through welfare assessments, the provision of healthcare, and awareness-raising sessions with owners.

OVERWORKING

Overworking is one of the main causes of poor animal health and welfare in the brick kilns.[145] The debt that the owners have accumulated, the pressure of delivering on daily quotas and their reliance on the animals to support their livelihoods result in them pushing the animals to work as much as possible with virtually no rest.

Animals work the same long hours as their owners and handlers, up to 10 hours a day, and may also be used outside those hours to help with chores and other transport needs. This often means that they work on their owners' day off and after their working day is over, limiting the time available for them to graze, rest and receive an appropriate diet.

OVERLOADING

Overloading is extremely frequent in all the industries employing working equine animals and it is common for animals to collapse under the weight of the bricks. Overloading[146] limits movement and routinely leads to injuries, including acute and chronic sprains and strains, severe back sores and other wounds, as well as irreparable fractures. The struggle of the animals to move as quickly as their handlers would like them to also leads to mistreatment such as beating, kicking and whipping, which causes physical injuries such as eye damage and blindness, as well as fear and stress.

INADEQUATE HARNESSING AND POOR MANAGEMENT PRACTICES

Working equines in the kilns commonly work with ill-fitted and poorly made harness equipment. Carts as well as packsaddles and panniers for pack animals cause poor body balance and wounds.[147] Because of the numerous journeys with heavy loads on uneven terrains, animals often experience pain and may suffer from strains, fractures or lameness as a result. These problems are exacerbated by poor hoof care, with animals working with overgrown, cracked and badly shaped hooves. Research has also shown that packsaddles kept uncovered on the ground can accumulate dirt, dust, and faeces that rub and infect the skin, resulting in infected lesions around the spine.[148]

BEATING, WHIPPING AND OTHER FORMS OF MISTREATMENT

Children are most often responsible for herding pack animals. As they are very often themselves exposed to similarly harsh conditions and may be particularly vulnerable if they are unaccompanied, they tend to mistreat the animals they work with or that work in the brick kilns (e.g. throwing stones, kicking, whipping etc).

Handlers, both children and adults, also rarely receive any training on working with and handling the animals and may have little empathy and interest in their welfare because they do not own them.

EXPOSURE TO SEVERE AND TOXIC ENVIRONMENT

Like human workers, animals are exposed to the heat, dust and toxic emissions from the chimneys. Temperatures in the brick kilns can exceed 50 degrees, which combined with lack of access to water during working hours, can lead to heat stress.[149] Many migrating animals also suffer from temperature shock when they are brought from the warmer climates of places in India to the sub-zero temperatures of Kathmandu Valley in Nepal.

[145] *Perumal, Dr. R.K. (2015). A Report By The Donkey Sanctuary India On Its Work In Brick Kilns. The Donkey Sanctuary India. Internally published brick kiln mapping report.*
[146] *On overloading of working equine animals, see for example: Pearson, R. A., Alemayehu, M., Tesfaye, A., Allan, E. F., Smith, D. G. and the late Asfaw, M. (2001); Use and Management of Donkeys in Peri-Urban Areas in Ethiopia, Report of Phase One of the CTVM/EARO Collaborative Project, April 1999-June 2000, University of Edinburgh. Centre for Tropical 2–6 Medicine, Ethiopian Agricultural Research Organisation.*
[147] *For example The Donkey Sanctuary India data from 2010 relating to their Ahmedabad project shows that out of 1131 cases treated 271 were harness wounds (nearly 25 per cent of total cases). Similarly harness related wounds were predominant in the 2012 in brick kilns where DSI operates. See also: Pritchard, J.C., Lindberg, A.C., Main, D.C.J., Whay, H.R., 2005. Assessment of the welfare of working horses, mules and donkeys, using health and behaviour parameters. Preventive Veterinary Medicine 69, 265–283.*
[148] *Brooke Pakistan, Risk assessment report – Study of shoulder, wither, spine, girth and hind limb lesions in working donkeys of brick kilns in Multan, 2008 (internal report).*
[149] *http://www.globalscienceresearchjournals.org/full-articles/a-review-on-welfare-and-management-practices-of-working-equines.pdf?view=inline*

Clockwise from top left: Donkey with rectal prolapse, Kathmandu Valley, Nepal; Overgrown and cracked hoof, Kathmandu Valley, Nepal; Emaciated mule with wounds, India; Donkey after it collapsed from exhaustion, Sukkur, Pakistan.

3.2 Limited Access to Healthcare and Other Service Providers

Working equine animals suffer from an extensive range of severe and debilitating health conditions, which makes their work extremely difficult, painful and distressing. These include lameness, rectal prolapse, wounds, hoof problems, and spinal pain. Additional conditions which animals work with are eye problems, respiratory problems, colic, and fatal diseases such as Surra (or Trypanosomiasis).[150]

Animals also have very limited access to healthcare and other equine service providers to improve their health and welfare. The migratory patterns of the animals and their owners and the seasonality of the brick kilns are major impediments to creating sustainable demand for equine services and establishing links between animal owners and service providers such as farriers. Animals may also be seen as disposable commodities. This is particularly the case for donkeys, for example in Nepal. As a result owners do not invest in animal care and use them as long as possible until they die or are unable to work when they will then be abandoned and easily replaced. This situation is exacerbated by lack of awareness and knowledge about the causes and consequences of the animals' poor health and welfare, including proper handling, harnessing, basic medical care for wounds, and nutrition.

The brick kilns are also poorly served by government and private vets and para-professionals. Vets and service providers tend to focus on easier and more profitable animal care rather than spending time on travelling to remote locations. As a result, owners may therefore have no choice but to take time off to take their animals to the service providers, leading to time loss and additional expenses incurred for travel. Affordability is also a challenge as equine owners can often not afford the costs involved for medication or veterinary services particularly if their animals are not able to work.

The lack of available, accessible and reliable services as well as poor knowledge often lead to owners using a range of local remedies for wounds and injuries that can be harmful, cause unnecessary suffering, and may exacerbate existing health problems. Harmful practices include using chilli powder thrown in the eyes of the animals to stop them from watering or pouring hot oil over wounds.

[150] *Surra is a blood borne parasite spread by flies which affects donkeys, mules and horses in the brick kilns particularly because of their location near marshy areas and open land. In such places close to where paddy is cultivated, Surra can be a particular problem.*

WELFARE ISSUES OF DONKEYS, MULES AND HORSES IN INDIA, PAKISTAN, AND NEPAL

Based on Brooke's animal welfare assessments,[151] a number of common welfare issues were identified across India, Pakistan, Nepal and Afghanistan with the most prevalent ones being: wounds on their body (from their working equipment or being beaten), spinal pain, fear towards humans, inability to walk normally with pain in their limbs, poor condition of their hooves, and eye problems. A breakdown by country shows the extent of the problems experienced by the animals working in the kilns considered. It also highlights the severity and extent of poor welfare of animals in Nepal where animal deaths happen every season with an average of 8-10 deaths per brick kiln in the Kathmandu valley.[152]

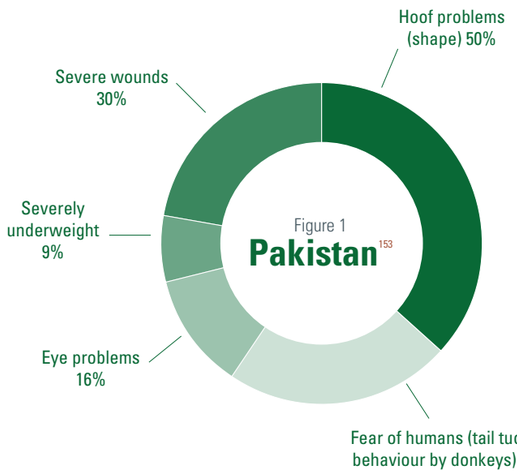


Figure 1
Pakistan[153]

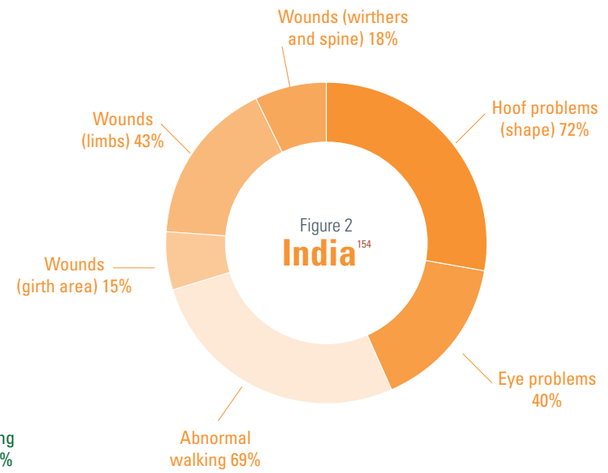


Figure 2
India[154]

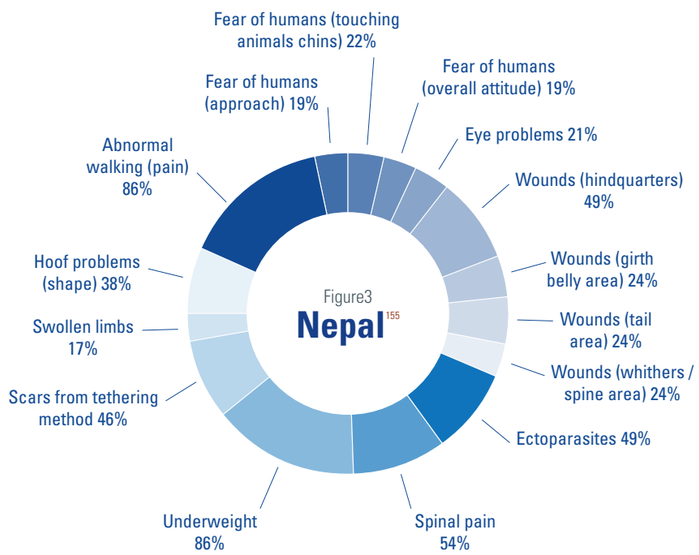


Figure3
Nepal[155]

[151] *The data shown was collected from Brooke's Standardised Equine Based Welfare Assessment Tool (SEBWAT). Country reports have not been published. Note: The assessments used do not include disease identification and prevalence and all health conditions (e.g. rectal prolapse, colic; heat stress).*
[152] *Source: AHTCS Brick kiln survey.*
[153] *2015 Data.*
[154] *2014-15 Data.*
[155] *2015 Data (Kathmandu Valley).*

Donkey and workers during closure of brick kilns after heavy rains, Kathmandu Valley, Nepal

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4. Policy and Legal Environment

The overall international policy and legal landscape for working animals including equines is weak. This is compounded by inadequate institutional representation and the absence of a dedicated body to drive this agenda.

One promising and highly relevant policy development is the recent adoption of the World Organisation for Animal Health (OIE) Global Standards for the Welfare of Working Equids. The Standards provide guidelines on the living and working conditions of donkeys, horses and mules "destined, used for or retired from traction, transport and generation of income" including their end-of-life care. The Standards are the first instruments focusing specifically on working equine animals. As such, they constitute an important tool for advocacy in country, regionally and globally. They also provide the foundations for the development of policies, legislation and regulatory frameworks for the promotion and protection of working equine welfare, including in specific settings such as the construction industry. OIE Member States, including India, Nepal, Pakistan and Afghanistan, are now required to take the necessary steps to translate and implement the Standards in their country.

The policy and legal environment on animal welfare in country is equally weak. Working animals also tend to be forgotten when animal welfare instruments are developed. Current laws are largely outdated and whilst in some rare cases legislation does include useful and relevant provisions for working animals, they tend not to provide specific provisions for specific settings such as the brick kilns (although the entertainment industry tend to feature more prominently in separate clauses). The implementation and enforcement of instruments is also inadequate due primarily to lack of financial and human resources, and very little interest to move the agenda forward.[156] For example, new laws incorporating the concept of animal welfare and recognising working animals have been drafted in Nepal, India and Pakistan, some with important provisions for working animals, but have not progressed to the adoption stage in years.

As is the case internationally, animal welfare also remains an institutional orphan in country, with no government unit or agency being responsible for the issue. Most often, animal welfare gets lost within livestock ministries whose remit solely pertains to food production livestock and is unconcerned by working animals.

Whilst in India the Animal Welfare Board was set up to secure changes for animals and promote their welfare in the country, its role remains advisory with limited control to influence government policy and legislation.

5. Strategies for Change

The issues related to working equine animals in the brick kilns have a set of common challenges with the environment and human labour. However, the main difference is that working animals are largely invisible in the debates and policy development pertaining to the brick making industry. An example of their invisibility is the current evidence gap and their lack of consideration by stakeholders involved in the brick kilns outside the animal welfare sector.

Several strategies to secure changes for working donkeys, mules and horses in the brick kilns have been implemented by animal welfare organisations. Until recently, these approaches primarily focused on changing individuals' behaviour and practices in the kilns and attending to the immediate healthcare needs of the animals. However over the past few years, organisations have started using advocacy to secure long-term changes to animal welfare in the brick kilns.

[156] *Source: World Animal Protection's Animal Protection Index.*

5.1 Stakeholders' Awareness Raising, Education and Engagement

As with human labour and the environment, an important strategy has been to raise awareness, educate and engage the main actors – primarily brick kiln and animal owners and handlers - that have direct or indirect influence over the living and working conditions of the animals in the brick kilns.

Some impact has been achieved in individual brick kilns through brick kiln and animals' owners' increased understanding of the needs and requirements of the animals. In particular, through the cooperation of brick kiln owners, the formation of equine welfare groups made up of animal owners in brick kilns in India and Pakistan has been a key driver of change. Improvements in the living and working conditions of the animals have included the procurement of feed, the provision of first aid kits, the installation of basic facilities such as shelter, and the establishment of linkages with farrier services.[157]

Child handlers have also been successfully engaged in the promotion of better welfare behaviour, attitudes and practices for working equine animals. In Punjab, Brooke Pakistan worked with ILO funded brick kiln based schools to secure the inclusion of animal welfare in the teaching programme provided to children in the brick kilns. The project was set up in collaboration with brick kiln owners and the local schools and successfully raised children's awareness and knowledge of equine welfare, including the importance of not beating the animals. The Punjab government has recently started a new project which will include opening non-formal education schools in 1,000 brick kilns, providing an opportunity for this successful small-scale project to be replicated and to strengthen the link between the work of ILO and that of Brooke Pakistan.

5.2 Direct Health Service Provision

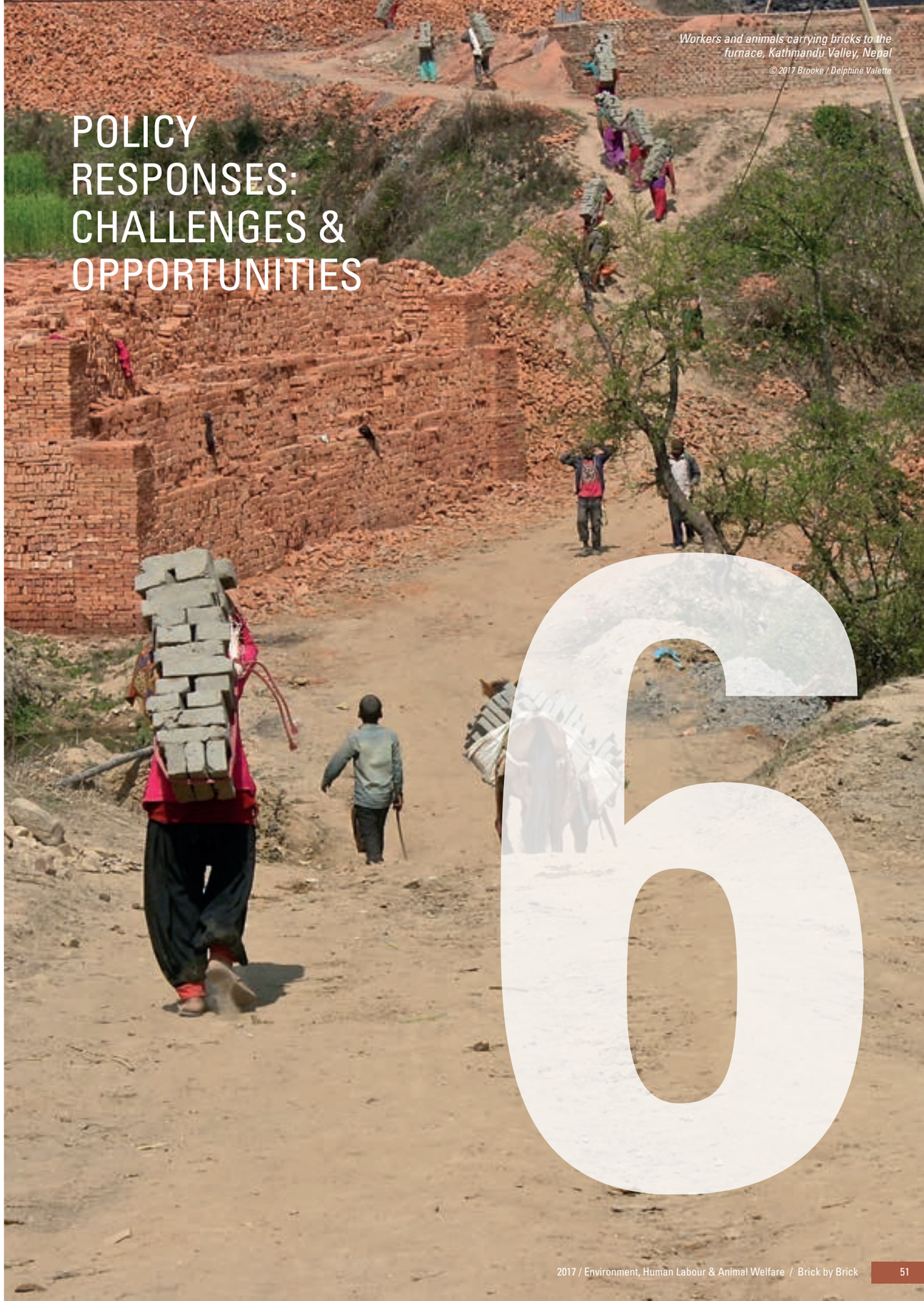
In the absence of appropriate and sustainable systems, animal welfare organisations have largely been the main service providers for working equine animals in the brick kilns. This has been primarily been done through mobile clinics visiting the kilns regularly. However in order to strengthen local service provision and establish a solid healthcare system there is now a move towards shifting the responsibility of equine services delivery to governments and private service providers via training, capacity building and mentoring of professionals. Animal welfare organisations are also working to facilitate the establishment of referral systems and the creation of stronger linkages between brick kilns' animal owners and service providers.

5.3 Policy and Advocacy

Policy and advocacy to improve working equine welfare is a relatively new approach and of small scale in comparison to the environment and human labour sectors. This is primarily because there are a smaller number of organisations working in this area, some do not work in the brick kilns, and their capacity to do advocacy is still in its infancy. Yet, there have been promising developments and emerging initiatives that provide opportunities for moving the issue up the policy agenda and which have led to some initial successes in country. As mentioned above, the adoption of the global standards for the welfare of working equids is an important development which advocacy stakeholders will be keen to capitalise on.

In addition, at the national level, small-scale advocacy initiatives have started to impact on working equine welfare in the brick kilns. In India, Pakistan and Nepal, equine welfare organisations have been working with associations of brick kiln owners to improve the working conditions of the animals in some kilns, with for example the provision of basic facilities. NGOs have also engaged with governments in the development of animal welfare laws in countries like India, Nepal and Pakistan, leading to the inclusion of working animal related provisions. However these laws remain to be adopted and implemented.

[157] *Brooke India. (2010), Review and Reflection, The Brooke India Direct Operations: 2009 – 2010.*



Workers and animals carrying bricks to the furnace, Kathmandu Valley, Nepal

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POLICY RESPONSES: CHALLENGES & OPPORTUNITIES

6

1. CHALLENGES

A number of common challenges across the three sectors have been identified by participants of the Regional Brick Kiln Advocacy Workshop hosted by Brooke in March 2015 and the background research to this report.

1.1. Lack of Coordination and Cross-Sectoral Approach

The current programmatic and policy responses to the multiple and complex issues of the brick kiln industry in South Asia are siloed and un-coordinated.

The three sectors of environment, human labour and animal welfare tend to operate in separate spheres, resulting in lack of knowledge and understanding of each other's issues. In particular, for a majority of stakeholders operating in the broader human development sphere, the consideration of the welfare of animals is often seen as a luxury and of minor importance compared with other issues. This is compounded by the nature of the development agenda approach that tends to focus on thematic based responses. Similarly, the working animal welfare sector has primarily evolved in an animal centric sphere which does not consider working animals within the "broader picture" of development. This has started to change over the past few years but the opportunities to build the bridge with the human development sectors have been rare.

1.2 Invisibility of the Brick Kiln Industry at National, Regional and Global Level

The brick kiln industry in South Asia remains largely absent from the national, regional and global political agendas, despite its economic scope and its significant and harmful implications for people, animals and the environment.

One of the main reasons that may explain this invisibility is that the brick making industry is largely informal and "concealed". It is primarily run by closed communities and influenced by private interests, powerful individuals, and family connections which seldom reach out for services from the external world. A study conducted by Sustainable Development Policy Institute (SDPI) on the state of brick kilns in Pakistan showed the lack of connection between the different stakeholders including the government:

"[t]he government representatives from the labour department, environmental protection agency or any other corresponding agency do not usually visit the kilns for monitoring purposes. There is little institutional contact".[158]

The industry also remains poorly understood across stakeholders from the supply and demand sides, including donor agencies.

The UK Guardian newspaper's investigation on "blood bricks" in Nepal revealed the use of bricks from kilns using child labour for development project[159] including by the World Food Programme and multinationals. Similarly, brick consumers are not aware of the practices prevalent in the kilns, for example in Pakistan.[160]

1.3. Lack of Research and Data

The invisibility and lack of understanding about traditional brick kilns is also driven by lack of data and insufficient research. Existing data is patchy and based on estimates or partial estimates. Whilst some local studies have been conducted in some countries, they remain small scale and too rare. Similarly the business case for moving to cleaner kilns in the region and the implications on human livelihoods, including for people relying on working animals to earn an income, has so far been inadequately considered.

1.4 Lack of Clear Coordination, Responsibility and Accountability for the Brick Kiln Industry Within Government Departments

"Everybody's business, Nobody's responsibility". This phrase was used a few years ago to describe the fragmented, silo-focused and weak institutional arrangements and governmental response to child and maternal malnutrition.[161] It is equally applicable to the context of brick kilns given the lack of clear responsibility and accountability for the brick kiln industry within national government departments and the insufficient coordination across ministries and other stakeholders. This is compounded by the scope and diversity of the issues that cannot be covered by a single body.

In addition, whilst it is often straightforward to identify the relevant Ministry within the context of human labour, it is less so in the context of the environment and the construction industry, and even more problematic for working animals as they do not fall under clear ministries and often fall through the cracks.

Children and mule, India
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1.5. Weak Policy and Legal Environment

The brick kiln related legal and policy environment remains largely inadequate, particularly in the implementation and monitoring of existing instruments. There is a need for greater resource and leadership to make laws and policies effective. In addition, raising awareness and increasing understanding and interest amongst policy and decision makers about the common issues across the sectors are critical to the development of a cross-sectoral policy and legal response to the industry's challenges.

[158] *SDPI (2009). Social Analysis of Brick Production Units in Pakistan. Sustainable Development Policy Institute.*
[159] *http://www.theguardian.com/global-development/2015/feb/12/aid-money-development-projects-nepal-child-labour*
[160] *Ibid.*
[161] *https://www.crin.org/en/docs/Everybody%27sBizBriefingFinal.pdf*

Young women carrying bricks, Kathmandu Valley, Nepal
© 2017 Brooke / Delphine Valette

2. OPPORTUNITIES

Brick making in South Asia contributes to national economies[162] and supports the livelihoods of millions of people. There are a number of existing and emerging opportunities at the global, regional and national levels that can be used to move towards a "reformed" industry at the core of which lie greater leadership, coordination, collaboration, cooperation and the recognition of shared responsibility in making changes happen.

2.1. Sustainable Development Goals (SDGs)

Paving the way towards the delivery of a sustainable development agenda for the next 15 years, the Sustainable Development Goals (SDGs) follow and expand on the Millennium Development Goals (MDGs). Some of the very distinct and welcome differences between the MDGs and the SDGs include the shift from a narrow and issue-specific approach to a "systems development approach";[163] the consideration of the root causes of poverty and of inter-related economic, social and environmental factors; the systemic dimension of global development challenges including weak institutional capacity; and the inclusion of environmental degradation. This makes them highly pertinent to the traditional brick making industry and a large number of goals and targets are of direct relevance to the environment and human labour issues highlighted in this report.

[162] *A study has found that in Bangladesh brick making contributes to about 1 per cent to the GDP. See: L. Croitoru and M. Sarraf, "Benefits and Costs of the Informal Sector: The Case of Brick Kilns in Bangladesh," Journal of Environmental Protection, Vol. 3 No. 6, 2012, pp. 476-484.*
[163] *United Nations (2015). Policy integration in government in pursuit of the sustainable development goals. Report of the expert group meeting held on 28 and 29 January 2015 at United Nations Headquarters, New York.*
[164] *This is not an exhaustive list but it focuses on some of the most relevant and critical issues that relate to people and the environment in the brick kilns.*

Key Relevant Goals Targets[164]

- National social protection systems and measures for all (1.3.)
- Access by the poor and vulnerable to basic services, appropriate new technology and financial services, including microfinance (1.4)
- Creation of enabling policy environments at the national, regional and international levels, to support accelerated investment in poverty eradication actions (1.b)

- Substantial reduction of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination (3.9)

- Substantial increase in the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship (4.4)

- Adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations (6.2)

- Immediate and effective measures to eradicate forced labour and secure the prohibition and elimination of the worst forms of child labour (8.7)
- Protection of labour rights and promotion of safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment (8.8.)

- Increased access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets (9.3.)
- Upgraded infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies

- Take urgent action to combat climate change and its impacts
- Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning (13.3)

The SDGs' greater recognition of a number of social, economic and environmental issues relevant to traditional brick kilns offers opportunities to raise awareness of the industry. Yet, they remain opportunities rather than solutions. Despite international and national instruments banning them, bonded and child labour persists and environmental degradation continues to be ignored.

Whilst the SDGs also set out the foundations to increase attention and action on the brick kiln industry in South Asia, they do not provide all the pieces of the puzzle to achieve the changes needed. One significant missing piece is the emphasis on roles and responsibilities in achieving change in the brick kilns, including that of trade unions, businesses, traders, and consumers as well as the recognition of the deeply entrenched cultural and power-centric dynamics of the industry.

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Woman worker having a rest to feed her baby, India

IN FOCUS: SDG GOAL 17: PARTNERSHIP FOR GOALS DATA, MONITORING AND ACCOUNTABILITY

Goal 17 of the SDGs puts the emphasis on partnerships and provides critical opportunities for engagement and collaboration with sectors such as animal welfare, which are not directly covered by the Goals. It also puts the emphasis on regional (South-South) and international (North-South) cooperation and collaboration including around the "promotion of development, transfer, dissemination and diffusion of environmentally sound technologies" (17.7).

Investing in greener technologies in the brick kilns in South Asia has already started with some countries like Bangladesh actively engaged and committed to shifting to the production of cleaner bricks. Bangladesh is a CCAC partner and was one of the governments which launched the initiative in 2012. It recently banned Fixed Chimney Bull's Trench Kiln technology, which was to be entirely phased out in 2016, and is working with support from the UK Department for International Development (DFID) and other partners including the Bangladesh Manufacturers Owners Association to introduce and scale up the FAL-G Brick[165] technology initiated in India. Lessons and experience from India are critical in Bangladesh and would be valuable in helping Bangladesh shape its greener bricks policies. It can also open opportunities for successful technology "upgrade" and knowledge transfer to other South Asian countries.

In Nepal, following the May 2015 earthquake that damaged a significant number of brick kilns, a number of national and international organisations (International Centre for Integrated Mountain Development (ICIMOD), Climate and Health Research Network, the Federation of Nepal Brick Industries (FNBI), and MinErgy Nepal) came together to initiate changes through technical knowledge transfer and to develop a partnership that led to nine improved zigzag kilns being built for the 2016 brick season.

These examples of South-South and North-South cooperation are not limited to brick kiln technologies and can be a critical element of the development of integrated and inclusive strategies or responses to address the challenges of the brick making industry as a whole.

2.2. Emerging Multi-Stakeholders and Cross-Sectoral Partnerships at the National, Regional and International Level

A number of partnerships – formal and informal – have emerged in recent years, creating opportunities for multi-stakeholder and multi-sectoral action to tackle some of the key challenges of the brick making industry.

THE CLIMATE AND CLEAN AIR COALITION

At the global level, the CCAC includes a specific initiative on brick production and provides an international framework for concrete and substantial action to accelerate efforts to reduce SLCPs through concerted and collective action from national governments, intergovernmental organisations, NGOs and private sector actors.

The CCAC's overall objectives include enhancing and developing new national and regional actions by identifying and overcoming barriers, enhancing capacity, mobilising support, promoting best practices and showcasing successful SLCP mitigation efforts. This puts the emphasis not only on action at different levels but also on learning and replication of successful efforts.

The Brick Production Initiative seeks to catalyse political engagement on brick kilns and secure the conversion or replacement of brick kilns with lower-emitting technologies and practices, and the production of higher quality bricks. It uses a multi-pronged approach driven by cooperation between key categories of stakeholders engaged in and/or responsible for matters related to brick kilns, and focuses on the establishment of global expert groups (states, multilateral agencies, civil society organisations and business) and networks to consolidate the state of knowledge on science, technology and policy.

The Initiative also seeks to address the public health and environmental issues associated with inefficient brick production and to reduce child labour in the sector. Although it does not consider working animals and their health, the CCAC's approval of Brooke's application to become an Actor, and its involvement in activities involving working animal welfare organisations demonstrate a willingness to engage with that sector.

Finally, the CCAC's brick production initiative provides significant opportunities for more stakeholders to engage including UN agencies such as ILO and UNICEF, technical experts and representatives from other sectors, using the environment as a cross-cutting theme to move the agenda forward.

BETTER BRICK NEPAL

Better Brick Nepal (BBN) is a multi-sectoral project implemented by a number of organisations of the Brick Clean Group Nepal. The project is being run with the financial and technical support from Goodweave International, Global Fairness Initiative, Humanity United and the support from the Federation of Contractors´ Associations of Nepal (FCAN).[166]

BBN seeks to drive a systemic change to the brick kiln industry in Nepal through a framework primarily driven by multi-stakeholder engagement on the production (including brick kiln owners, contractors) and receiving end (consumers). The project aims to achieve long-term and sustainable changes by focusing on market-based incentives for "better bricks" which are made ethically. The core of the project relies on a certification system whereby brick kiln owners abide by standards. Participating kilns receive technical assistance to eliminate child labour, improve working conditions, boost production efficiency and raise product quality, as well as make linkages to potential markets.

The project started with the production of certifiable standards on child labour, bonded labour and decent working conditions including wages, working hours, health and safety, and disciplinary practices.[167] BBN has recently started to engage with the environment and the animal welfare sector. In the case of the latter, preliminary work was done to consider the inclusion of working animals into the BBN through the implementation of standards for working equine animals based on the forthcoming Nepalese government-led standards for animal welfare and the OIE Global standards for the welfare of working equids.

BBN provides an opportunity at the national level to improve the situation in the brick kilns across the three sectors but also to create linkages with other initiatives such as the CCAC's brick production initiative which is being implemented in Nepal. It also offers an innovative platform to engage with other critical stakeholders such as ILO, trade unions employers' organisations.

[165] *FaL-G is a factory produced brick made from of fly ash (Fa), lime (L) and gypsum (G).*
[166] *Source: http://globalfairness.org/about-gfi/news-reports/latest-news/149-gfi-signs-mou-with-fcan*
[167] *http://globalfairness.org/attachments/article/150/BBN%20Standard%20-%20FINAL%20August%202015.pdf*

2.3. Health as a Cross-Cutting Issue

Using health as a cross-cutting and cross-sectoral issue creates another and unique opportunity to build a strong case for increased attention to the brick making industry, bringing the three sectors of the environment, human labour and animal welfare together to build a strong agenda. In addition, the relatively new concept of "one health - one welfare" recognises the connections between environmental welfare, human welfare and animal welfare and potentially provides a starting point for an inclusive and integrated approach to some of the critical issues in the brick kilns, breaking the "artificial compartmentalisation"[168] that characterises the current responses to the industry's challenges.

[168] *Colonius, T. J., & Earley, R. W. (2013). One welfare: a call to develop a broader framework of thought and action. Journal of the American Veterinary Medical Association, 242(3), 309-310.*

Worker in charge of digging soil, Lahore, Pakistan

7

CONCLUSION & RECOMMENDATIONS

CONCLUSION

The popularity and use of traditional brick kilns in South Asia adversely impacts the environment and its human and animal workforce. A number of significant political, socio-economic and cultural factors affect the brick making industry's ability and capacity to address its challenges. The current – largely siloed – response and the overall lack of awareness and engagement of policy and decision makers internationally, regionally and nationally means that the issues in the brick kilns remain largely ignored.

There is a strong case for greater action on the brick making industry in South Asia including its strong link with environmental, human and animal health, but also its rights and welfare implications for the people and the animals who work in the brick kilns. The sectors of the environment, human labour and working animal welfare should not be seen as separate. They have key linkages which need to be better understood and articulated with a view to building a solid, cohesive, and coordinated agenda for action.

There is a long way to go to ensure that the brick kilns moves from the margins to more important ground in international, regional and national policy processes and initiatives such as the SDGs but it is hoped that this report will provide the foundations for kick starting much needed multi-stakeholder discussions and engagement across sectors, including around the following recommendations.

LEADERSHIP AND COMMITMENT

- The traditional brick making industry is largely invisible on the global, regional and national policy agendas. Greater political leadership and action are needed to make the brick kiln sector more visible and a higher priority for policy makers and implementers, including as part of the implementation of the 2030 Agenda for Sustainable Development.
- National governments must prioritise effective measures to tackle the brick making industry's challenges, including through the establishment of adequate and effective institutional arrangements, the development of strategies with clear outcomes, measurable targets and well resources and championed at the highest level.
- National governments must establish a coherent policy, legal and regulatory framework that addresses the environmental, human labour and animal welfare issues in the brick kilns, as well as ensure its adoption and its effective implementation.
- At the regional level, SAARC must commit to making brick making one of their key priorities and work with national governments to address the challenges of the industry in the region.
- Global, regional and national political leaders should organise a high level political summit dedicated to the brick making industry in South Asia by January 2018 with a view to formulating a Roadmap for transforming the brick making industry and tackling some of its most pressing challenges.

Child and donkey after finishing working day, Sukkur, Pakistan

Workers unloading donkeys, Ahmedabad, India
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RECOMMENDATIONS

COOPERATION AND COORDINATION

- International and regional cooperation is fundamental to supporting countries' capacity to deliver changes in the traditional brick making industry. There are examples of the positive impact of cooperation around technical support on improving brick making technology. These must increase and cooperation between the sectors of human and animal welfare must also be considered.
- The human labour, animal welfare and environmental sectors must work together more proactively to find integrated solutions, building on key linkages such as health, and existing partnerships such as the Clean Air and Climate Coalition's Brick Production initiative and emerging framework of "One Health –One Welfare".
- Civil society organisations must come together to coordinate their action, work with governments, raise awareness on the brick kiln industry by engaging policy makers and influencers such as parliamentarians and media, and make governments accountable for commitments made and the implementation of plans and strategies.
- Coordination mechanisms to develop and implement a multi-sectoral and multi-stakeholder agenda must be set up in country and led by national governments.
- Donors must support and collaborate with national governments to develop multi-sectoral policy and programmes, and ensure their effective implementation. They must also coordinate to ensure coherence in the delivery of technical assistance and mobilisation of resources to implement policy and programmes.

MULTI-STAKEHOLDER STRATEGIES AND ACTION

- Multi-stakeholder and multi-sectoral platforms for coordination and action at national level must be established and drive the transformational agenda of the brick making industry in country.
- National governments in country and SAARC at the regional level must take the lead in setting up and institutionalising these platforms, including the appointment of a government "champion".

DATA COLLECTION AND RESEARCH

- The full picture of the brick making industry in South Asia remains largely unknown, with no or limited official data on the number of brick kilns in country, the technology used, and the use of human and animal labour. Collecting strengthened and comprehensive sets of national and regional data across sectors must be a key priority and be led by national governments. Some of the priority areas for data collection should include:
- Setting up information systems on the brick kiln industry in South Asia to provide baselines and track progress.
- Large scale studies on the environmental, human and animal health and welfare impact of the traditional brick kiln industry.

BRICK by BRICK

Fundamental Principles and Rights at Work Branch (FUNDAMENTALS)

International Labour Organization
4 route des Morillons
CH-1211 Geneva 22 – Switzerland
Tel: +41 (0) 22 799 61 11
Fax: +41 (0) 22 798 86 95

fundamentals@ilo.org
www.ilo.org/fundamentals

@ILO

Brooke

5th Floor
Friars Bridge Court
41-45 Blackfriars Road
London, SE1 8NZ
United Kingdom
Tel: +44 (0) 20 3012 3456

info@thebrooke.org
www.thebrooke.org

@TheBrooke

The Donkey Sanctuary

Sidmouth
Devon
EX10 0NU
United Kingdom
Tel: +44 (0) 1395 578222

enquiries@thedonkeysanctuary.org.uk
www.thedonkeysanctuary.org.uk

@DonkeySanctuary

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