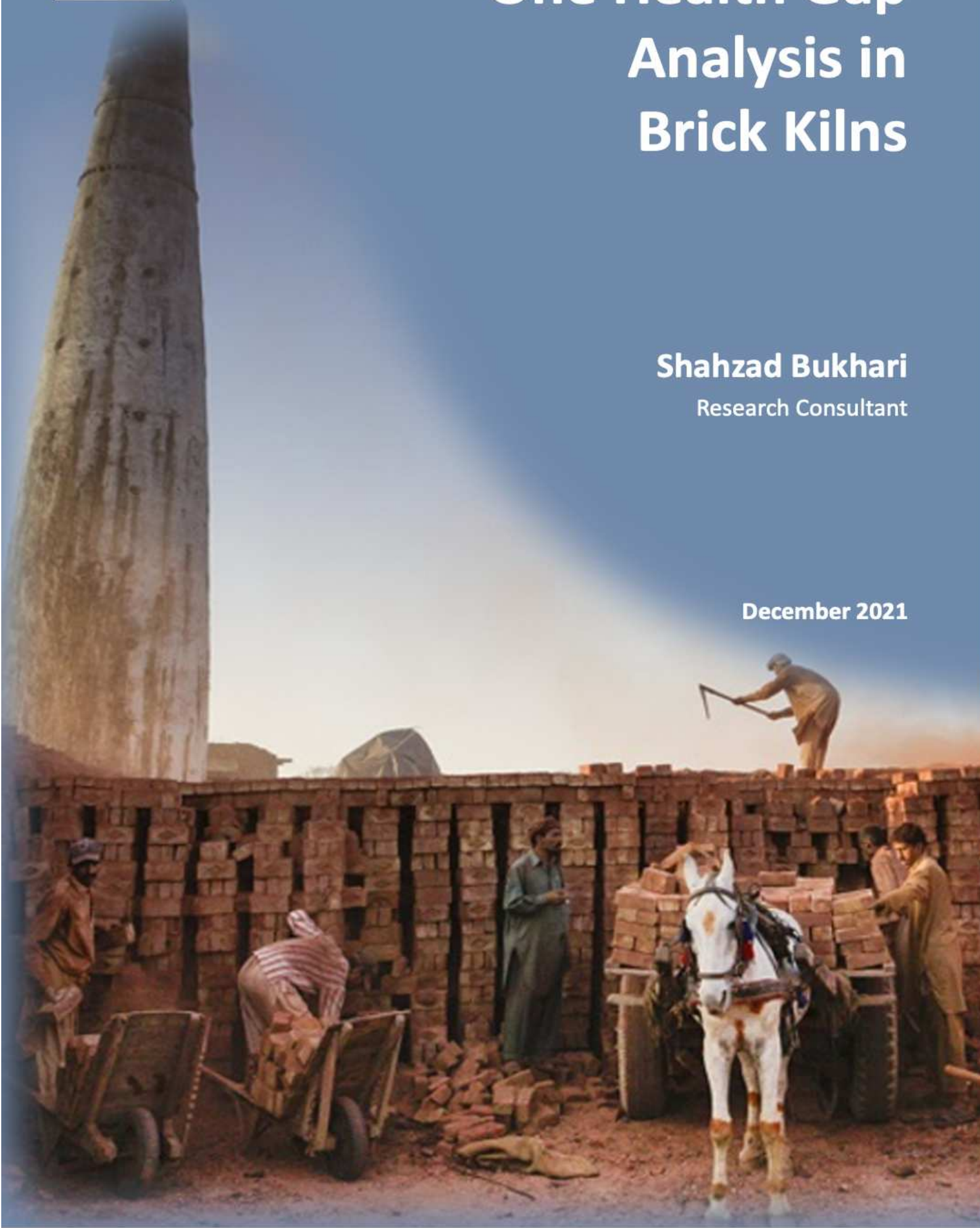




Research Study One Health Gap Analysis in Brick Kilns

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ACRONYMS	3
ACKNOWLEDGMENTS.....	4
1. EXECUTIVE SUMMARY.....	5
1.1 SUMMARY OF FINDINGS RELATED TO SUSTAINABLE DEVELOPMENT GOALS 1, 3 AND 6.....	7
1.1.1 The Goals for SDG 1: End poverty in all its forms everywhere, are:	7
1.1.2 The Goals for SDG 3: Ensure healthy lives and promote well-being for all Ages, are:	8
1.2 SUMMARY OF FINDINGS RELATED TO ONE HEALTH APPROACH	10
1.3 SUMMARY OF RECOMMENDATIONS.....	11
2. INTRODUCTION	13
3. CORE RESEARCH FINDINGS	14
3.1 ECONOMICS AND LIVELIHOODS FINDINGS RELEVANT TO SDG1.....	14
3.1.1 <i>Availability of Financial Support</i>	19
3.2 ENVIRONMENTAL ISSUES FOR PEOPLE AND ANIMALS RELEVANT TO SDG 3	21
3.2.1 <i>Human Health</i>	22
3.3 SDGS AND ONE HEALTH APPROACH	24
3.3.1 <i>Economics and Livelihoods Findings Relevant to SDG1</i>	24
3.3.2 <i>Environmental Issues for People and Animals Relevant to SDG 3</i>	24
4. CONCLUSIONS & RECOMMENDATIONS	26
4.1. CONCLUSIONS	26
4.1.1. <i>Key Water & Sanitation Issues</i>	26
4.1.2. <i>Key Animal Health & Welfare Issues</i>	26
4.1.3. <i>Key Human Health Issues</i>	27
4.1.4. <i>Key Human Labour Issues</i>	27
4.1.5. <i>Links between Human and Animal Health</i>	27
4.2. RECOMMENDATIONS	28
4.2.1. <i>Creating a Resource Information Base</i>	28
4.2.2. <i>Animal Health</i>	29
4.2.3. <i>Human Health</i>	30
4.2.4. <i>Environmental Health</i>	30
4.2.5. <i>One Health</i>	30

ANNEXURES

- 01 Study Terms of Reference
- 02 Literature Review
- 03 List of Documents Reviewed
- 04 In-Depth Interview and FGD transcripts
- 05 Field survey results/Tables

LIST OF TABLES

Table 1: Common Human Health Issues While Working at Kiln Environment	07
Table 2: Children born at the brick kiln	08
Table 3: Environmental Issues at the Kilns	08
Table 4: Average Monthly Income from an Animal	11
Table 5: Animals Owned by a Family	12
Table 6: Household Expenditures	12
Table 7: Average cost of animals	12
Table 8: Did your parents also do this work?	13
Table 9: Animal’s daily (Average) feed cost	13
Table 10: Expenditures on the treatment for animals	13
Table 11: Sources of treatment	14
Table 12: Source of income when there is no work at the Brick Kiln	15
Table 13: Contributions of women to Family Income	15
Table 14: Most important animal issues at the kiln	16
Table 15: Common animal accidents at the kilns	16
Table 16: Common health problems while working at the kiln	19
Table 17: Issues due to unsafe drinking water	20

ACRONYMS

AWERB	Animal Welfare Ethical Review Body
BCC	Behaviour Change Communication
BP	Brooke Pakistan
CCA	Community Change Agent
CCAC	Climate and Clean Air Coalition
CDC	Centre for Disease Prevention and Control
CNIC	Country National Identity Card
CSOs	Community Support Originations
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
IDI	In-depth Interview
ILO	International Labour Organisation
L&HRD	Labour and Human Resource Department, Punjab
M&E	Monitoring & Evaluation
OSH	Occupational Safety and Health
SAA-CIWCE	Saeed Ahmed Awan-Centre for the Improvement of Working Conditions and Environment.
SDGs	Sustainable Development Goals
TOR	Terms of Reference

ACKNOWLEDGMENTS

A research project has many benefits, especially this one, which is the first of its kind in Pakistan. These researches give the researcher the opportunity to improve one's professional profile, visit new communities, and engage with people with different problems and solutions. Any research project results from the joint efforts of the organizations involved and the individuals in the project team. This study is the result of the hard work and untiring efforts of the following people:

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Our special thanks to Brick Kiln workers and their family members, who provided their time and valuable information during the survey and discussions.

No study is done in isolation: I am thankful to my field enumerators team for data collection and compilation and Ms. Virginia Khan, anthropologist and communication specialist, who provided valuable support structuring the report and compiling the results and findings.

We have made all efforts to ensure the accuracy of the data presented and the interpretation thereof. Any errors that may remain are solely my responsibility.

Shahzad Bukhari

Lead Researcher

1. EXECUTIVE SUMMARY

This study was conducted to identify key human health, animal health and welfare, and environmental issues at selected brick kilns in Pakistan and the perceived linkages between them. As noted in the study proposal¹ Brooke Pakistan wishes to understand where these concerns map onto SDG1: (End poverty in all its forms everywhere); SDG3 (Ensure healthy lives and promote well-being for all Ages) and SDG6 (Ensure availability and sustainable management of water and sanitation for all).

The research findings may help Brooke Pakistan to make informed strategic decisions about how best to use a One Health approach to addressing some of the key health and environmental issues, with the goal of improving the welfare of working equids and the families that depend on them.

A One Health approach is based on addressing the three domains of human, animal and environmental health. It is defined by the Centre for Disease Prevention and Control (CDC) as “a collaborative, multisectoral, and transdisciplinary approach—working at the local, regional, national, and global levels—with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment. One Health is an approach that recognizes that the health of people is closely connected to the health of animals and our shared environment”.

One Health links to the SDGs take several forms. In a human-health-focussed analysis the author notes that “the COVID-19 pandemic has highlighted the potential of One Health approaches to accelerate progress towards the sustainable development goals (SDGs).. Recognizing that “the health of humans, domestic and wild animals, plants and ecosystems are closely linked and inter-dependent”, One Health approaches aim to improve disease management by bringing together medical, veterinary and environmental scientists and policy specialists.² The Network for Evaluation of One Health suggests a [Roadmap to a One Health agenda 2030](#), arguing that “the current fragmented framework of health governance for humans, animals and environment, together with the conventional linear approach to solving current health problems, is failing to meet today’s health challenges and is proving unsustainable”. The disconnect grows between human health, animal health and environmental and ecosystems health. A paradigm shift is urgently required to de-sectionalize human, animal, plant and ecosystem health and to take a more integrated approach to One Health (OH). The Sustainable Development Goals (SDGs) offer a framework and unique opportunity for this. OH calls for a better understanding, acceptance and use of a broader and transdisciplinary set of assessment metrics”.

It is hoped that the study will contribute to Brooke Pakistan’s ability to make strategic decisions about how Brooke can adopt an inclusive approach to improve the welfare of animals and their owning communities. The study will also contribute to the knowledge base on One Health, thereby contributing to the three goals of Brooke Pakistan’s Strategy 2022-2025: (1) transforming equid welfare in communities helping them thrive and become more resilient; (2) influence the visibility and inclusion of equid needs in policy and practices at all levels, including disaster and emergency preparedness and (3) develop sustainable animal health systems that meet the immediate and future needs of working horses, donkeys, and mules.

The study does not claim to establish any causal relationships between any animal, human and environmental issues. Nor does it claim to be representative of all situations in brick kilns across Pakistan.

¹ https://docs.google.com/document/d/1var9DyVjn_CiszZcDYG9pTRm2tnoldo-/edit

² Dye, C. 2022. [One Health as a catalyst for sustainable development | Nature Microbiology](#)

Methods

Nine brick kilns were visited in three districts of Punjab for the research. Selected sites were rural where Brooke facilitated the process of finding sufficient numbers of survey respondents. A ‘transit walk’ took place at each site to introduce the researchers to the kiln workers, take photographs, visit the kiln furnaces, identify the kinds of kilns and the materials used for fuel and to identify the water sources. The researchers saw domestic animals (e.g. goats, cows and buffalos) and chickens as well as pet and wild dogs at the kiln sites. The researchers spent 2 - 3 days at each kiln site.

The kilns visited in Bahawalpur and Rawalpindi are traditional structures; the one in Lahore is a zigzag structure³. The research team observed that the kilns all burn coal, tires, used rubber shoes, industrial and agriculture waste and used leather, and emit gasses and toxins.⁴ The water sources at the kiln sites were tube-wells.

The interviews and FGDs with kiln workers and their wives were conducted in Urdu and Punjabi and translated into English. Interviews with Government officials were conducted in English. The transcribed interviews and FGDs are contained in Annex 04.

An extensive literature review of published scientific studies was conducted, in order to inform the study with a broad context of issues on subjects relevant to brick kiln technologies, animal and human working conditions, animal health and One Health. Much of the information is drawn from Brooke, as well as studies co-authored with Brooke. The review provides background information needed to inform the research tools - FGD Guidelines, the household survey and the In-Depth Interviews - for the study, as well as the concept and practice of a One Health approach. The review includes scientific studies that address the inter-connections between the animal, human and environmental domains that exist in the brick-kiln sector. The Literature review, with links, is shown in Annex 02. Annex 03 lists the documents reviewed.

The study does not assume that potential inter-connections are causal inter-connections.

Activity	Location	# of men	# of women	Total	Totals
Survey	Lahore	33	11	44	Survey 158
	Bahawalpur	31	16	47	
	Rawalpindi	42	25	67	
FGDs	Lahore (2 FGDs)	18 (10 + 8)	4	22	FGDs 75
	Bahawalpur (2 FGDs)	23 (12 + 11)	8	31	
	Rawalpindi(1)	12	10	22	

None of the kiln workers or the women in their families who were requested to take part in the survey refused. In addition, a total of 75 animal owners, (53 men and 22 women) participated in 05 FGDs in the three sample regions and 07 In-Depth Interviews were held with Government officials from the Environment Department, the Livestock Department and the Labour Department and with a female Doctor. The quantitative data was analysed

³ Zigzag kilns reduce coal consumption by 20% and produce up to 70% lower levels of pollution than the existing technology”. Published in DAWN, Syed Muhammad Abubakar, May 7, 2020, <https://www.dawn.com/news/1552655>

⁴Khan, M. W. concludes# that “Traditional Brick kilns in which rubber is used as a fuel is the most harmful and Contemporary Brick Kilns are the safest types of brick kiln”.

using SPSS. The qualitative data was analysed using content analysis: some statements are quoted verbatim in the report. The quantitative results and the IDI and FGD transcripts are shown in **Annex 04**.

Ethics: Care was taken in designing Informed Consent statements for the surveys, FGDs and IDIs. The research team observed the animals' working conditions, resting places and access to food and water during the research but did not interact with the animals. The BP staff accompanying the consultant in the fieldwork were familiar with AWERB guidelines concerning ethical animal care. Particular care (privacy, language, time availability, etc.) was taken to include women's perceptions, and to do this in culturally-appropriate ways, since women's voices are not usually heard and their opinions are not solicited.

Limitations : A number of limitations were encountered during the research.

There were not enough animal owners at some of the sites so the research team had to travel to additional sites in order to find enough people to interview. The first attempt in Lahore was not productive as there were limited number of animal owners available at the brick kiln. The research team had to travel other sites to complete the target.

No one refused to respond to the survey questions, or to participate in a discussion, but some of the kiln workers did not have the information that was requested. The kiln workers and their wives are not literate or numerate, so they had to rely on memory to respond to the questions about, for example, health matters and some expenditures. As the excerpts from the FGDs show, major expenses were recalled by many participants (for example buying an animal and paying health care costs). It is possible, however, that, with prices fluctuating and the need to recall events from the past, some of the figures given are not reliable. This could also account for some of 'no response' answers to the survey questions.

The brick-kiln respondents are unlikely to have access to any 'public health' messaging on disease prevention so their knowledge of the nature and effects of human diseases is limited. Their responses to questions about human illnesses must therefore be understood as assumptions. A good example is the attribution of water quality to "bone disease" as well as 'malaria'.

As the "One Health" concept is new for everyone it was difficult to orient the IDI respondents and get the required information. The Livestock Department had a better understanding but the L&HRD had no idea about the concept nor any understanding of it. This meant that the concept had to be explained, and it was difficult for some respondents to link a One Health approach with the policies and programmes they are implementing.

1.1 Summary of Findings related to Sustainable Development Goals 1, 3 and 6

1.1.1 The Goals for SDG 1: End poverty in all its forms everywhere, are: ⁵

1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day; 1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions; 1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable; 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance; 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and

⁵ <https://www.un.org/sustainabledevelopment/poverty/>

reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters;

Study findings related to SDG1

Economic poverty is common with the animal owners and they are sometimes in long-term debt to the kiln owners because they are bonded labourers. The data indicates that there are many factors which contribute to the poverty in these groups including: low wages for their labour, no earnings if they are sick, workdays lost if their animals are sick or injured, and periods of no work at the kilns due to intermittent operating periods i.e. cold weather, monsoon periods.

Animal care is costly in relation to the animal owners' income and other expenditures, as noted in the survey data and FGDs with animal workers (Annex 04). If their expenditures on human health, animal feed and/or veterinary care exceed their ability to pay, they often must enter into further debt. The low-income levels and presumed inability to set money aside likely mean that they cannot afford to purchase the strongest and fittest animals when they do purchase a working equid.

The kiln workers' economic insecurity is made worse by the fact that they cannot avail the social security and health benefits to which they are entitled, as some other workers do under Pakistan's labour legislation. Although they are technically eligible to apply for Computerised National Identity Cards and therefore to receive Government assistance, most of the kiln and animal workers lack the literacy, knowledge and means to apply. As noted by a Brooke Pakistan Veterinarian, "none of the animal workers are covered in Social Security, none of them have applied to receive a "Health Card", and none of them have applied for the Rs. 2,000 relief from the PM's initiative. The reasons could be no CNIC and no awareness about how to get enrolled in these programs".

1.1.2 The Goals for SDG 3: Ensure healthy lives and promote well-being for all Ages,⁶ are:

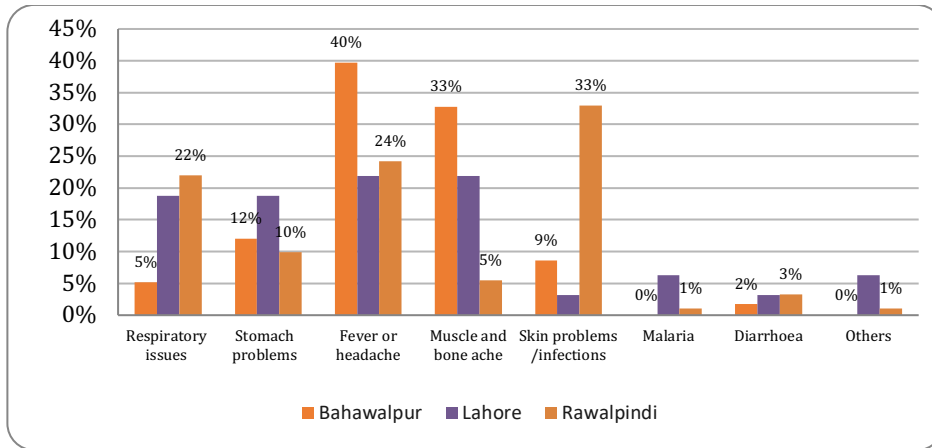
3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births; 3.2 By 2030, end preventable deaths of new-borns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births; 3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases; 3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being; 3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol; 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents; 3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes; 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all; 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination;

Study Findings related to SDG3

Goals 3.3, 3.4, 3.8 and 3.9 are particularly significant in the context of brick-kiln labour. Common health issues described by survey respondents include respiratory issues, stomach problems, fever or headaches, muscle and bone aches, skin problems, malaria and diarrhoea. The remaining respondents identified "other" unspecified problems.

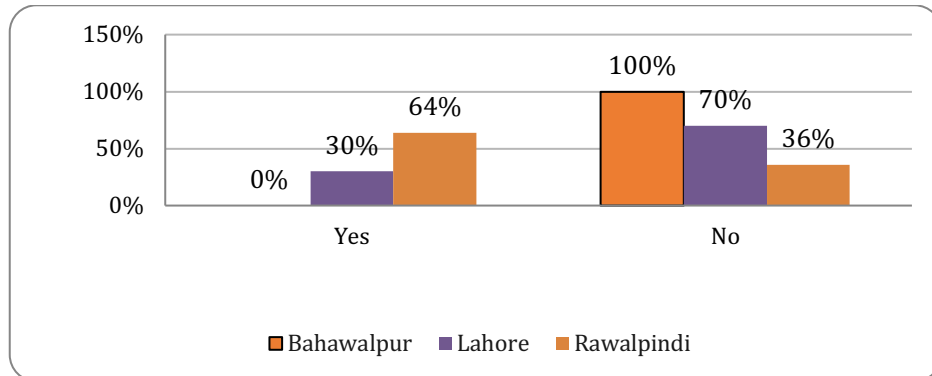
⁶ <https://sdgs.un.org/goals/goal3>

Table 1: Common Human Health Issues While Working at Kiln Environment (T35)



It is quite likely that good hygiene during childbirth at home is difficult to achieve, as the majority of children at the Lahore and Rawalpindi sites surveyed were born in the same dwelling (with unhygienic conditions) that the animals occupy at night. The exception is Bahawalpur, where 64% of the women surveyed had given birth at the basic health unit. The reason could be the proximity of the brick kiln to the BHU. The women in Rawalpindi reported the highest number (64%) of children born at the kiln site.

Table 2: Children born at the brick kiln (TA6)



1.1.3 The Goals for SDG 6 (Ensure availability and sustainable management of water and sanitation for all) are:⁷

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all; 6.2 By 2030, achieve access to 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; 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally; 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity; 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate; 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes;

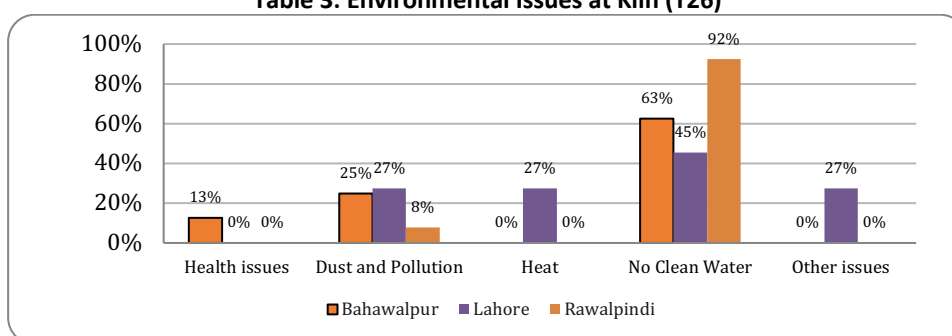
⁷ <https://www.un.org/sustainabledevelopment/water-and-sanitation/>

Study Findings Related to SDG 6

A Doctor who has treated brick kiln workers and their wives at a BHU noted during an interview that “safe drinking water is a dream for this community. Even if the women were to wash their hands and bathe every day (which they cannot do) their environment is polluted with germs and animal waste on the walls, beds, shoes, utensils, and linens, and they cannot remove the germs from their hair and nails.”

The workers and their families do not have any scientific knowledge of the effects of impure water on the well-being of the animals and themselves but the respondents said they thought some of their medical problems are likely to be related to drinking polluted water. Since the brick kiln owners provide the housing, electricity and water, the kiln workers have no recourse to improving the quality and supply of water, even if it were affordable. The poor quality of water simultaneously affects both people and animals. In discussions it was revealed that people face health and skin problems which they attribute to the water, while sometimes the animal’s digestive problems are thought to be due to drinking unhygienic water.

Table 3: Environmental Issues at Kiln (T26)



1.2 Summary of Findings related to One Health Approach

These vulnerable populations battle disease, debt, loss of livelihood and reduced economic well-being with consequences that extend to their families, communities, livestock and the environment⁸.

The findings of this study suggest that a One Health approach would be a useful way to address the three SDGs and inter-linked issues to improve human, animal and environmental health, thereby contributing to achieving a number of Brooke Pakistan’s strategic goals. For the brick kiln workers, poverty results in the inability to earn enough to provide sufficient food and preventive and curative health care for the workers, their working animals and their family members. These issues must first be acknowledged as inter-related, with many issues arising from multi-dimensional and inter-generational poverty. One study on One Health⁹ notes “Infectious diseases are known to disproportionately affect the poorer sectors of society, particularly those living in low- and middle-income countries. These vulnerable populations battle disease, debt, loss of livelihood and reduced economic well-being with consequences that extend to their families, communities, livestock and the environment. In recent years, as examples of One Health implementation have been documented and assessed, the linkages between One Health interventions and poverty alleviation have become more obvious. One Health interventions have the potential to reduce the economic burden of disease and create more efficient systems and approaches that generate higher savings, both direct and indirect, at the human-animal-environment interface. Measuring the impact of this link between One Health and poverty alleviation has its constraints since appropriate metrics are still evolving”.

⁸ <https://pubmed.ncbi.nlm.nih.gov/31564734/>

⁹ *Ibid.*

Because people and animals live and work in close proximity in brick-kiln environments, breathe the same air, eat vegetation grown in the same soil, and drink water from the same sources, it can be assumed that conditions in one domain affect the others. “In recognising the interconnectedness of human and animal health with the health of our shared environment, One Health offers a valuable framework to prevent and control emerging infectious diseases through collaboration, coordination and communication across the various sectors involved”.¹⁰ One Health can also prevent outbreaks of numerous infectious diseases, including zoonotic diseases: “People and animals can act as reservoirs of disease, including zoonotic diseases, and poor sanitation is known to be a major factor in human diseases”.¹¹ The fact of working in a polluted and polluting environment - the brick kilns - is both a cause and effect of poor health for animal owners and working animals. A One Health approach links these factors with each other and, if adopted at the policy level with sound planning and implementation, offers a useful and innovative way to move forward.

The study found that Government officials in the Livestock Department have had some exposure to the One Health approach, from Brooke Pakistan. Other Departments had no knowledge but several indicated that they would be receptive to learning more about it. The interviews with Government officials are shown in Annex 04.

1.3 Summary of Recommendations

The study findings and analysis lead to a number of recommendations for action. A summary of these is presented below. See Chapter 4 of the report for the full list of Recommendations. It is understood that Brooke Pakistan will determine the scale and scope of its engagement with One Health.

- Create a Resource Information Base to bring all of the One Health information - on human health, animal health, environmental and economic studies, legal requirements and programmes - into one resource base for Brooke Pakistan. This should include both scientific and “local” grassroots knowledge. It will be important to include women’s perspectives in the resource base and in the One Health approach.
- If a One Health approach is to be adopted, it would be useful to establish longitudinal data collection practices in selected brick kiln sites where Brooke Pakistan is active. With relevant metrics, this would provide useful information about the issues related to the SDGs and One Health, such as water and air quality, animal and human health and economic circumstances, over time. The data could be included in quarterly reports, with baselines established and periodic updates. The reports could then be shared with Brooke Pakistan’s partners, the CCAC and with Government Departments.
- Efforts should be made to include the brick kiln workers in national social security schemes, to which they are entitled.
- Encourage the Environment Department to take the lead in adopting an One Health approach and to encourage inter-Departmental co-operation. There is a need to link the different Government Departments and officials (e.g. District Vigilance Committees) with responsibilities for human health and animal health with each other, so as to ensure coordination and efficiency in service delivery.
- Contribute to research on the efficacy and potential dangers of home remedies to alleviate animal illnesses.
- Expand employment opportunities for the kiln workers and establish links to the Home-based Workers’ Association for the women.
- To improve animal health, design and implement a holistic, multi-sectoral approach to solve problems and improve the health and well-being of people, animals and the natural environment.

¹⁰ [One Health Basics](#)

¹¹ *Ibid.*

- For improved human health, design a BCC campaign to improve the workers’ personal and domestic hygiene practices. It should include information about the hazards of poor sanitation in their homes and work environments and how to maintain clean environments for themselves and for their animals. The campaign should include the knowledge that animals and people can be afflicted by the same conditions and information on zoonotic diseases.
- To improve environmental health, Brooke Pakistan should continue to engage with its partners, the ILO Pakistan office and the CACC to advocate for the adoption of cleaner kiln designs and fuels and for improved water quality.
- Brooke Pakistan could take the lead in establishing a shared database of information (e.g. on vaccination campaigns) with the relevant Government Departments. This could lead to working animals being included. Brooke can also provide their inputs (from field-based practices and research) to the Labour, Livestock and Health Departments in drafting and amending their respective laws to include Brookes’ animal welfare concerns.
- L&HRD should look into human labour working hours whereas Livestock Department must look into animal working hours.

2. INTRODUCTION

Brooke Pakistan identified a need to better understand the animal welfare, human labour and health and environmental issues present in the brick kilns and how these map onto SDG1: No poverty, SDG3: Good health and well-being and SDG6: Clean water and sanitation. It is this knowledge that will enable Brooke Pakistan to move forward with immediate goals of engaging stakeholders and demonstrating where there may be synergies between their agendas, thus enabling decisions about how best to move forward a common agenda for improved animal and human welfare and environmental health.

This study was intended as a preliminary investigation to identify and document the landscape of issues. It explores stakeholders' perceptions of human, animal health and environmental concerns at sampled brick kilns and the perceived interlinkages between these concerns.

It is envisaged that the evidence could be used to motivate relevant stakeholders, decision makers and policy makers to consider animal welfare and raise the visibility of these animals on the agendas of those who have otherwise overlooked their significance, and to support work to motivate the adoption of best practices by equid owners in the brick kilns. The research findings will also enable Brooke Pakistan to join with other stakeholders working on "One Health Approach" to addressing some of the key animal, human and environmental health issues in the brick kilns, including those issues linked to Sustainable Development Goals 1, 3 and 6.¹²

Please see the research proposal for a full description of the background, aims and methods.

¹² The Terms of Reference for the study is attached as **Annex 1**.

3. CORE RESEARCH FINDINGS

This section provides analysis of the qualitative and quantitative data collected including the discussions with key informants. The information is organised thematically, according to economics, workplace safety for people and working animals, human and veterinary health and factors in the natural environment at the brick kilns that affect people and animals. Links to One Health and the SDGs are made, according to thematic areas, in addition to being developed further in the Conclusions and Recommendations section.

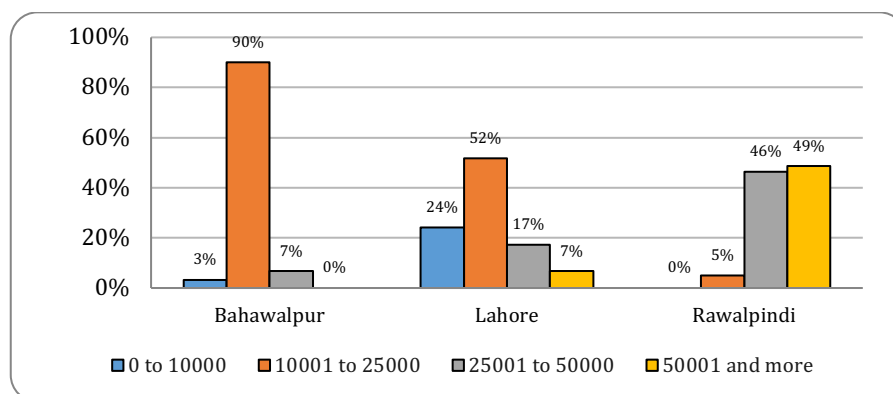
3.1 Economics and Livelihoods Findings Relevant to SDG1

The animal owners and handlers use animals for their traction power to carry unfired bricks from the moulding area to the firing location as well as baked bricks from the kilns to warehouses, 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 hierarchy¹³.

Studies on brick kiln workers in Pakistan have shown that they are exploited economically. Studies in Afghanistan, India, Nepal and Pakistan have found that the majority of brick kiln workers are illiterate and belong to the most economically and socially vulnerable groups in society. They work in hazardous environments and are bound up in multi-generational poverty. The health of brick kiln workers is made worse due to the often remote kiln locations and the lack of available healthcare. Adults and children are caught in a vicious cycle: children are put to work when they are young and inherit the debts of their parents. An Al Jazeera report notes that “the money they owe keeps increasing, spiralling out of reach, thus keeping them and future generations in debt. Reasons for this can include high interest on the amount borrowed, low wages further cut due to corruption, increasing and unlawful deductions, and forged entries into the books that the workers do not get to see”.¹⁴

Differences were found in the number of animals owned at the three kiln sites. Some families have only one animal for each member, while some animal owners have more than one (3-5 and more) animals at home. In Bahawalpur (90% equine owners), usually keep earn up to Rs. 25,000, (USD 112.26 as of Dec. 9th 2022) per month. On other hand Rawalpindi is quite different, as some of the survey respondents were contractors who own several working animals (equids) and earn between PKR 250,000-500,000 (1,112.84 USD to 2,225.68 USD) per month, that also includes worker’s salaries and wages.

Table 4: Average Monthly Income from Working/Equine Animal (T12)

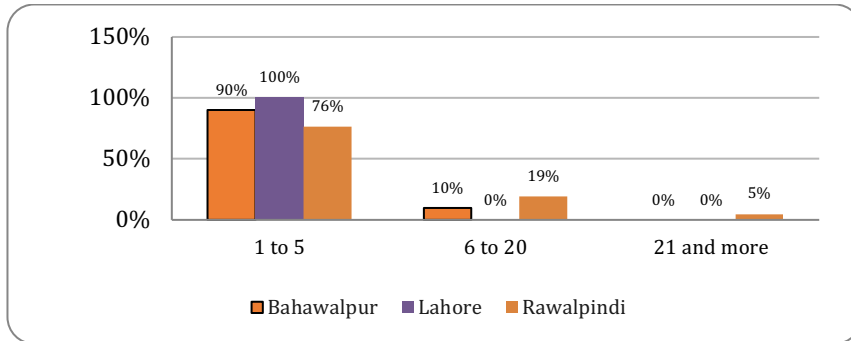


¹³ Brick-by-Brick, Environment, Human Labour & Animal Welfare, Unveiling the full picture of South Asia’s brick kiln industry and building the blocks for change, Brooke Publication-2016

¹⁴ Ghani, F. 2019. The spiralling debt trapping Pakistan’s brick kiln workers | Human Rights | Al Jazeera.

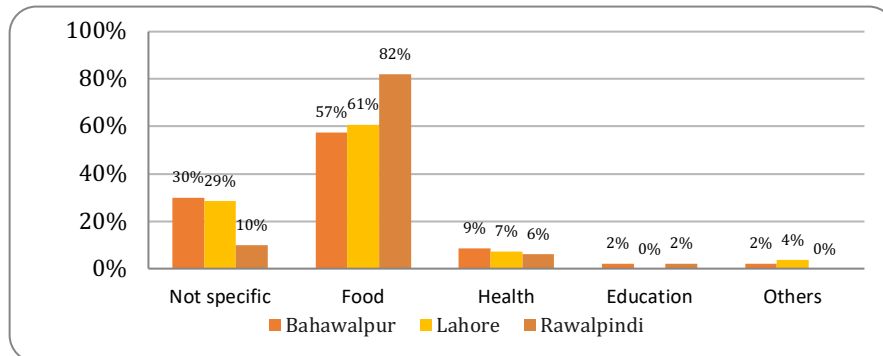
By far the majority of respondents (90% in Bahawalpur, 100% in Lahore and 76% in Rawalpindi) own or rent between 1-5 animals (Table 8). As noted, the situation in Rawalpindi is different from the other sites visited, in that some contractors own or rent large numbers of animals: 19% in Rawalpindi and 10% in Lahore own between 6 to 20 animals, and 5% in Rawalpindi own 21 or more animals.

Table 5: Animals Owned by a Family (T8)



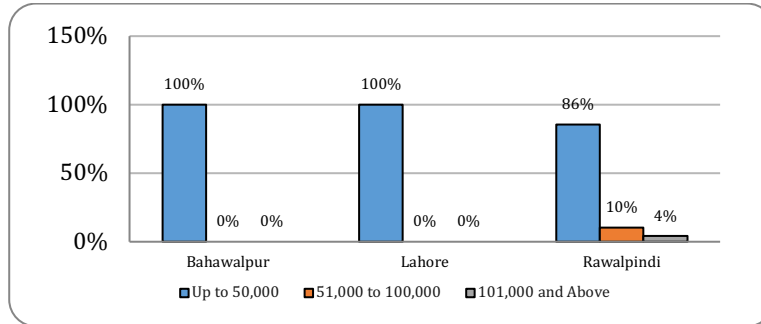
The major expenditure by the animal workers’ households is for food (Rawalpindi 82%, Lahore 61% and Bahawalpur 57%), followed by health. People and animals are equally vulnerable to having insufficient food whether this is caused by poor health, an injury, or extreme environmental conditions such as extreme heat, cold, monsoon, flooding or a pandemic.

Table 6: Household Expenditures (T13)



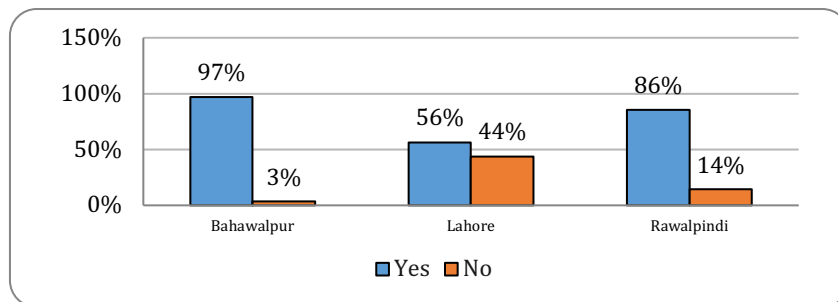
The animals are expensive to buy for most of the workers. The average cost of a working donkey is up to Rs. 50,000 (222 USD as of Dec. 2022) as reported by all three districts (Bahawalpur and Lahore 100% and Rawalpindi 86%), while some families (especially youth who prefer horses) also buy healthy animals, worth 100K and more (Rawalpindi 4-10%), but their number is very low.

Table 7: Average cost of an animal (T09)



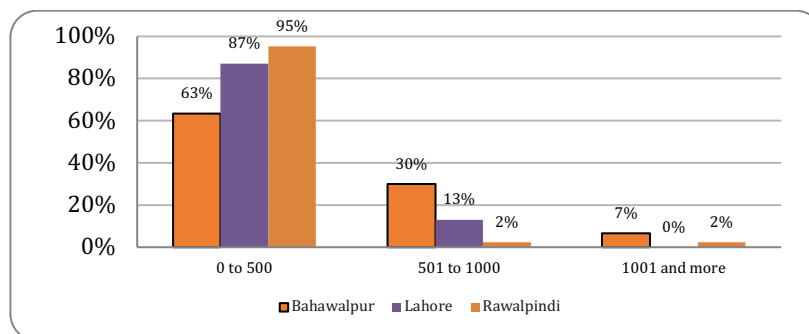
The majority of the respondents are second generation kiln workers (Bahawalpur 97%, Lahore 56% and Rawalpindi 86%), which may speak to their inability to get out of debt.

Table 8: Did your parents also do this work? (T3)



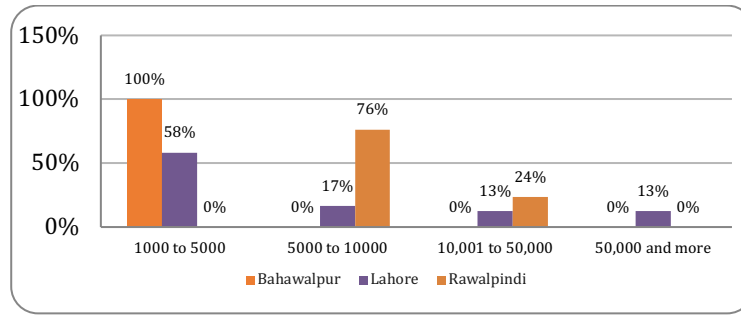
With the exception of Rawalpindi, fodder for the animals is expensive in proportion to income. Reported daily costs for feed are up to Rs 500 in all three districts (Rawalpindi 95%, Lahore 87% and Bahawalpur 63%). Due to the hot and dry climate in Bahawalpur the amount of free grazing and grass for the animals is lesser than the other two districts. There were few respondents in Bahawalpur (7%) and Rawalpindi (2%) who spent up to Rs. 1,000 a day. However, 7% in Bahawalpur and 2% in Rawalpindi said they could not manage the cost of feed.

Table 9: Animal's daily (Average) feed cost (T27)



Decisions on whether and when to call a veterinarian are driven by how much money the families have. Last year's costs for treatment were estimated at 1,000 rupees per month) by all the respondents in Bahawalpur and 58% in Lahore, while 76% in Rawalpindi estimated that they paid 5,000 and 10,000 Rupees on monthly basis. Twenty four percent reported the cost was between 10,000 and 50,000 Rupees (based on number of animals at home). There is a definite cost to the treatment on a daily and monthly basis but these high figures seem likely to be an over-estimation or a miscalculation in comparison of their monthly income.

Table 10: Expenditures on the treatment for animals (T29)



Verbatim 01

Once, when my animal was sick and could not work for three months. We spent around 16,000 rupees on the treatment and lost 78 days of work and wages.

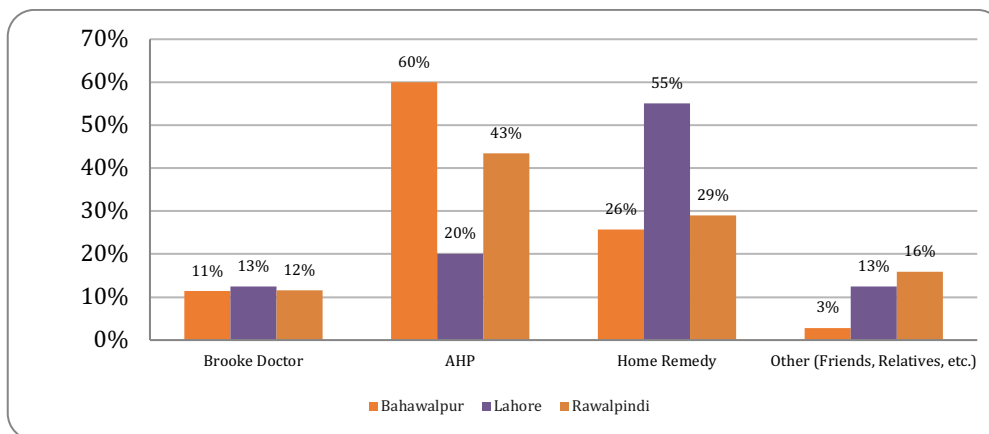
Animal Owner, Lahore

One of my horses (worth 150K Rupees) died and that shock made me sick for a week. I could not go to work in that period and lost wages as well. **Animal worker at Rawat**

Brick Kiln, Rawalpindi

The primary sources of that (paid) treatment were AHPs (60% in Bahawalpur, 20% in Lahore and 43% in Rawalpindi). Brooke staff also provide treatments in dire emergency, (12% in Rawalpindi, 10% in Lahore and 11% in Bahawalpur). Home remedies are also reported as sources of treatment, at 26% in Bahawalpur, 55% in Lahore and 29% in Rawalpindi. **However, since the Brooke Pakistan veterinarians noted that the use of home remedies is quite common, this may promote quackery and misuse of medicines that can contribute to anti-microbial resistance.**

Table 11: Sources of treatment (T30)



Brick-kiln work is seasonal and majority of the brick kilns work from September to June. High prices, non-availability of the fuel and extreme weather also affect the working and production of a kiln.

Since the work in the brick kilns is seasonal, the workers have to survive and manage their own livelihoods when the kilns are not operational. Respondents indicated that it is difficult to find alternative waged employment when the kilns are not operating. They said they subsisted on loans (“*pashgi*”) (93% in Rawalpindi), moving to their hometowns and relying on relatives (Lahore 61% and Bahawalpur 59%). As mentioned earlier, there is a huge outlay on the animals’ food and care: since the men do not have work and struggle to survive, the animals suffer as much as the owning family, as noted below.

Verbatim 06

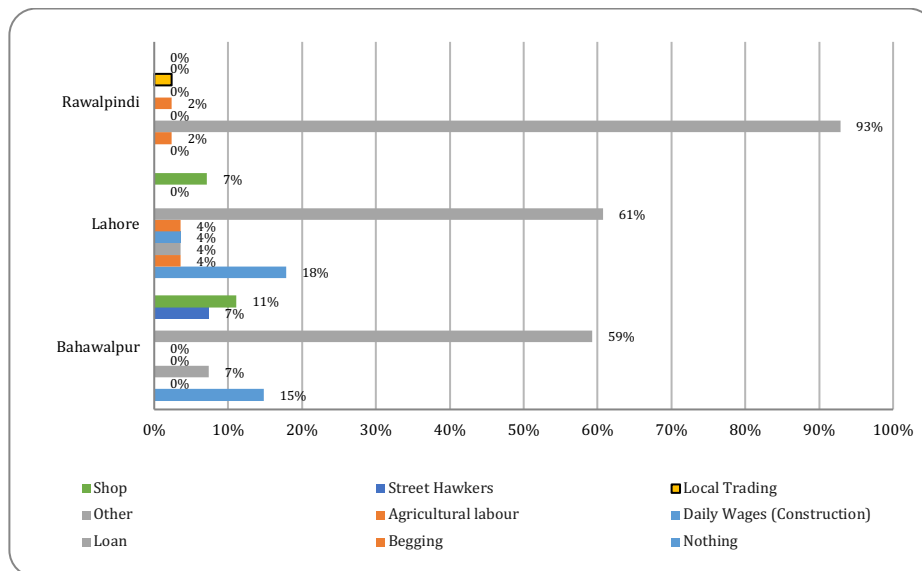
If an animal is sick or dies it affects everything. The first cut will be on the food and I (a pregnant lady) need more food than others. I will be unable to produce a healthy baby, and unable to breastfeed due to weakness if I do not have enough nutritious food.

Pregnant Woman in Bahawalpur

The FGD participants also reported animal sickness and injuries result in loss of work and earnings, result in frustration and sometimes violence at home. One woman said that when their husbands have problems due to lack of work, or when animals unable to work due to any reason, they take out their anger on the women, who then might beat their children.

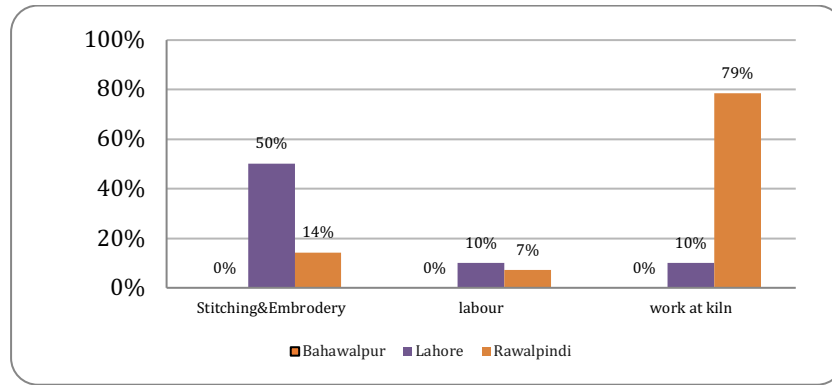
The low earnings, due to animal owners’ own health issues and animals’ sickness or injury directly affect the family’s ability to buy food and to meet their needs for other household needs.

Table 12: Source of income, when there is no work at Brick Kiln (T06)



The workers have no access to affordable credit but rely on loans (known as *Peshgi- a loan that negatively influences wage rate*) to finance emergencies. Majority of the women in Lahore (50%) have the advantage of being able to earn, as some of them earn money by stitching and embroidery that they sell to local community members outside the kilns. The women in Rawalpindi (79%) accompany their male family members and do brick making work at the kiln. The culture of Bahawalpur is authoritarian and more conservative where no women (0%) are involved in any economic activity other than the domestic chores: i.e. help the male members in caring for their animals at home.

Table 13: Contribution of Female in Family Income (TF4)



3.1.1 Availability 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 workers. They have no ‘credit history’ except with the kiln owners. The kilns also have a negative reputation because the labourers are bonded to the kiln owners while they are indebted to them. The kilns engage in documented bad practices and rights violations, including bonded labour and child labour¹⁵. The employment at brick kiln does not provide enough income that help repay loans regularly throughout the year.

It is clear that deeply rooted poverty has negative effects on the brick kiln workers, their families, and the animals they rely on to earn a living. For example, people find it difficult to access emergency treatment or preventative medical and veterinary care because they cannot afford it. Children, animals and adults cannot eat nutritious food. Emergency care for animals is necessary but poses economic shocks for families and people are often driven more deeply into debt during these emergencies. There is no option available for veterinary or medical ‘insurance’, even if it were affordable. NRSP has an insurance model¹⁶ for the poor which covers health and accidents. There is no evidence of any link to these services for kiln workers or any effort to negotiate with NRSP or other organisations to provide these services to kiln workers.

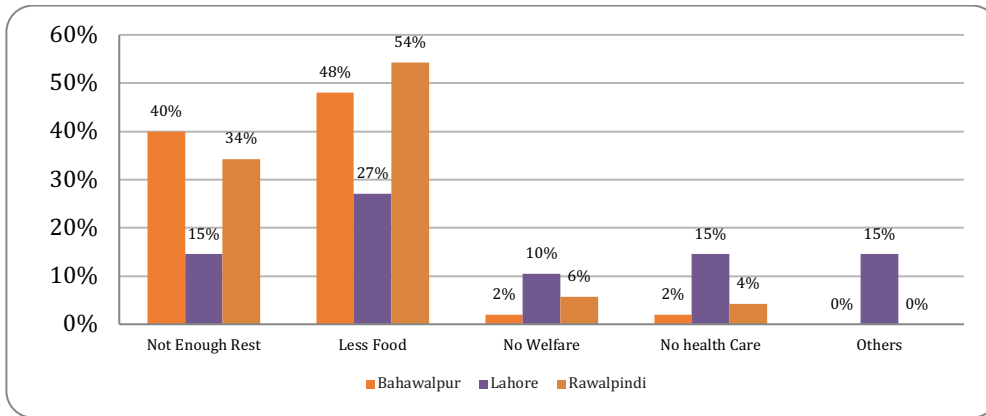
3.1.2 Animal Health and Welfare

Survey respondents identified the lack of feed (Bahawalpur 48%, Lahore 27% and Rawalpindi 54%) and proper rest (Table 14) as the most important issues for animal care. Due to the prevailing poverty, (especially in those areas where work is seasonal) low income affects both human and animals’ nutrition. Additional entrepreneurial activities, both for men and women in the community, may offer solutions to this issue but more research on their activities, timelines, skills and inspiration is needed.

Table 14: Most important animal issues at the kiln (T19)

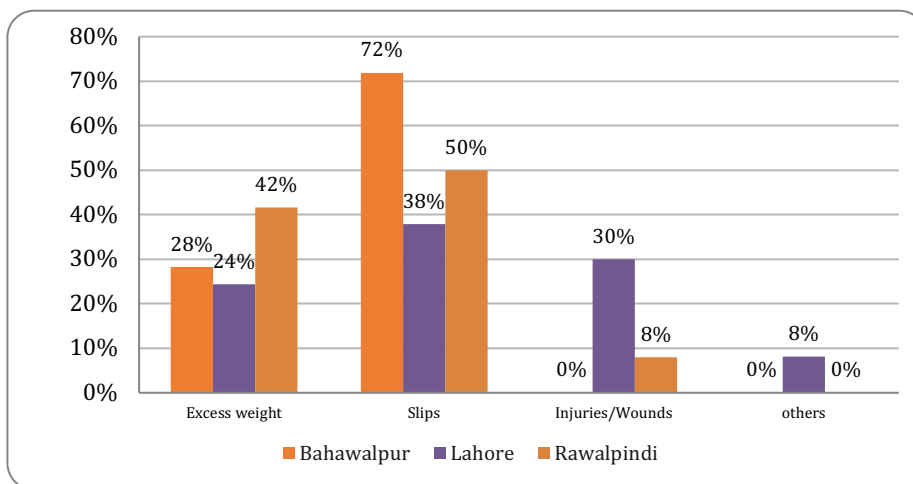
¹⁵ https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---declaration/documents/publication/wcms_082028.pdf

¹⁶ ILO [NRSP - Pakistan](#)



The working animals suffer from many health problems, including harness wounds and saddle sores.¹⁷ Skin diseases also occur: these are often treated with home treatments, as noted in the FGDs with men. The animals’ wounds are washed with water that is not clean. The women said during an FGD that they recognize some conditions that affect the animals’ health, but have no ‘remedies’ beyond adding sugar to the fodder to strengthen the animals. Most of the men identified ‘laziness’ as a sign of illness in the donkeys.

Table 15: Common Animal Accidents at Kiln (T39)



Rabies was mentioned by the respondents in all study areas, although it cannot be confirmed that rabies has actually been experienced, without laboratory testing. Cases of animal-to-animal transmission reported, as noted in verbatim statement 03. The animal owners do not know how to deal with their equids when they appear to have rabies: some owners killed them and some others sold their animals to get rid of the problem. Rabies-specific information would be of great value to the animal owners and handlers, critically in terms of human and animal health but also to avoid monetary losses.

Verbatim 03

¹⁷ Similarly, Khan’s study (no date) of kiln donkeys in Peshawar found that donkeys suffer from “saddle sores ... are heavily infested with endoparasites and ... are under-fed and debilitated.” They are “fed wheat straw and rice husks which contain few nutrients and their hooves are not shod and are filled with gravel.”

- I had a mule, who started biting and bit my brother-in-law. I sold the mule for 75,000 Rupees; I even informed the buyer that the mule was biting but he bought the mule and it bit other animals and people. **(Animal Worker during FGDs, Lahore)**
- Couple of years ago a dog bit my donkey. We tried all possible treatments but with no luck and the dog and donkey both were killed. **(Animal Worker during FGDs, Bahawalpur)**

A study on working-donkey health in Peshawar found that donkeys in brick kilns “work for about 12 hours a day, six days a week.”¹⁸ The working hours mentioned by the respondents of the current study are similar (12-15 hours). The animal is also engaged with his owners for similar hours. Male FGD respondents said that “The animal owners work 7-14 hours a day, depending on brick production. They get up at 03:00 am and work till 05:00 pm with a breakfast and lunch break. They are paid Rs. 300 per 1,000 brick transportation and each animal worker hauls 4-5 thousand bricks on a daily basis. Friday is usually a holiday, but it is optional: if there is work to be done at the kiln, they have to work longer hours”.

Verbatim 04

There is no control on working hours: if an animal worker is working 14 hours the animal has to work 14 hours as well. L&HRD should look into human labour working hours whereas Livestock Department must look into animal working hours.

Dr. Aman, Brooke-Pakistan, Tarnol

Injuries to the animals are common at the kilns. For example, slipping at the kiln is the most common accident, according to 72% in Bahawalpur, 38% in Lahore and 50% of respondents in Rawalpindi. The second most common problems are caused by carrying excess weight, as reported by respondents. The donkeys also sometimes hurt each other if they are crowded together and during mating.

Verbatim 02

According to the Livestock Department there is a legal penalty on overweighting the animals but no evidence of such a penalty ever being imposed was noted during the workers’ lives.

Animal Owner, Bahawalpur

My mule fell from the kiln and was injured. We took it to the veterinarian and got treatment. He could not work for two months.

Animal Owner, Lahore

3.2 Environmental Issues for People and Animals Relevant to SDG 3

According to numerous scientific studies, the key environmental issue at the brick kilns is air pollution (discussed under key health issues)¹⁹.

There are no workplace safety measures (safety shoes, masks, protective equipment,, or warning signs) available for the workers or animals at the kiln sites. During the rest or no-work time, animals stay under the trees if available or in the shadow of the nearby buildings but no proper protection or shelter from the extreme heat or rain is available. They are watered at home in the morning and evening by the women, but during working hours water is only provided when the job is completed. According to a Brooke Pakistan staff member, the animal

¹⁸ Khan, S. Donkey management and utilisation in Peshawar, Pakistan. Brooke Hospital for Animals, Ko'ragh Chowk, Sugar Mills Road, Mardan, Peshawar, Pakistan

¹⁹ See the section on air pollution at brick kilns across South Asia in the Literature Review, **Annex 03**

owner avoid sparing their animals for water. None of the brick kilns visited for the study had a water trough for the animals although some had water buckets, presumably to water the animals. During the hot season, people and animals suffer from dehydration and ultimately people cannot earn and the animals get sick. Brooke Pakistan supports the animal owners by providing first aid to animal owners,

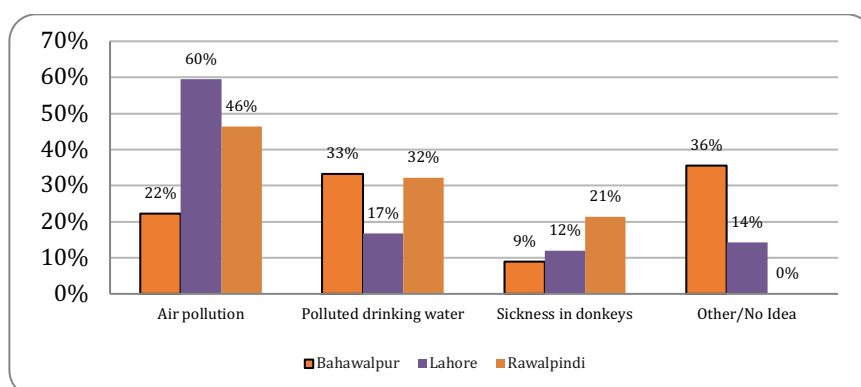
There are community change agents(CCAs) in each brick kiln. They are trained by Brooke on preventive care and husbandry management. Due to this intervention community are able to manage primary level animal health and welfare issues..

3.2.1 Human Health

The responses from the quantitative and qualitative data indicate that many respondents are affected by health problems. Some of these may result from air pollution, constant dust at the kiln sites and the need to live in close proximity to the animals. The hard physical labour will also affect their health.

In terms of kiln-workers’ understandings of air and water quality as issues pertaining to human health, women FGD respondents said that they think air and water pollution are linked to frequent illnesses in children, adults and the animals at the kiln sites. Sixty percent of respondents in Lahore identified air pollution as a likely source of human health problems, as did 46% in Rawalpindi and 22% in Bahawalpur.

Table 16: Common health problems while working at kiln (T38)



Verbatim 05

The smell of animal waste affects the breathing system of the family. It also increases the mosquitos and flies, which has a greater effect on the family women and children. We also get malaria due to these waste of animals. The flies around the waste and urine also cause diarrhoea, especially to the kids.

Shaukat, brick kiln worker, Manga Mandi

Animal skin ache/dermatitis can also affect humans, there is no evidence but there are chances. Animal respiratory issues affect animal to animal: if one animal is having nasal issues, the next day many of them are seen with the same problem.

Amjad Ali, brick kiln worker, Manga Mandi

I was injured once during my work and I did not wrap the wound and kept working with animals and due to animal waste and urine my wound got worse. I visited the doctor and got a tetanus which healed the process.

Animal Worker

3.3. Water and Sanitation Issues Relevant to SDG 6

It is possible that the water supply at the brick kilns is contaminated, according to the findings of a 2017 study that found that “about 20% [of the] population of this country has safe drinking water while the remaining 80% are unfortunate in this case”.²⁰

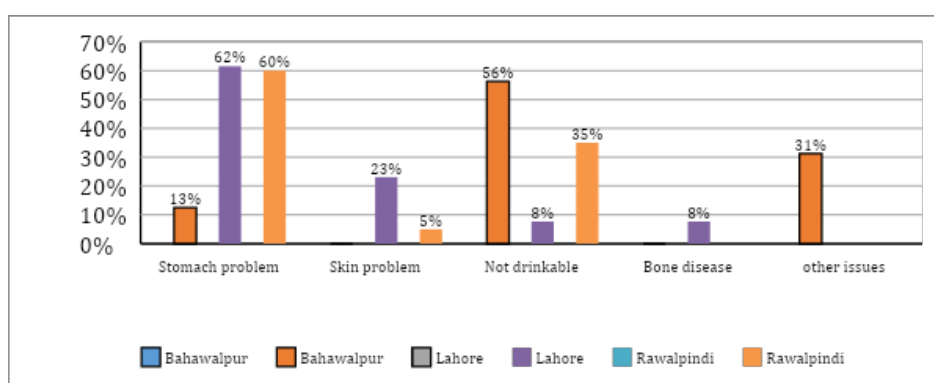
Forty three percent of respondents in Rawalpindi attributed human health problems to polluted drinking water but the figures dropped to 13% in Bahawalpur and 15% in Lahore. Due to the low levels of awareness about hygiene (especially with infants) women and children are made ill by unsafe drinking water and unhygienic practices while dealing with children.

Verbatim 07

My granddaughter is almost a year old. She has had continuous vomiting and motions since her birth, but the doctor only gives syrup and medicines but no progress is made.

Kausar, Mother of Sarwar, Manga Mandi

Table 17: Issues due to unsafe drinking water (TF10)



Verbatim 08

“The houses/families who do not have animals are cleaner and healthier than us because our time is divided between our children and animal care, while they (the women who do not care for animals in their homes) give all their time to nurturing, cleaning and feeding their children”.

“We live close to the animals. Sometimes when our children are playing in the courtyard with toys (balls, etc.) the toys go to the animals' area which is usually full of shit and urine. Children do not understand the danger of this shit and urine and start playing with the toys again and get their hands, clothes and linen dirty, and leave germs on those things, which ultimately affects their health and sometimes ours too.”

Nasreen, Brick Kiln, Rawat

Women found primarily responsible to care of working animals at home, as they clean, feed and groom the animals daily. Women are responsible for household hygiene and health, which is one of the bases of the men’s and children’s health. Providing women with the information and the resources they need, as part of a public health and hygiene programme, has the potential to be useful and effective. If home-testing kits were available,

²⁰ The problem of water pollution caused by brick kiln emissions is analysed in [Deterioration and Degradation of Aquatic Systems Due to Brick Kiln Industries -A Study in Cachar District, Assam](#)

women could learn the basic steps of determining the safety of the water they use and that they give to the animals.

3.3 SDGs and One Health Approach

3.3.1 Economics and Livelihoods Findings Relevant to SDG1

Animal health and human health are closely linked. Both breathe the same polluted air, have poor access to clean water, sanitation and cleanliness, neither receive the levels of healthcare they need, both suffer from poor nutrition and both experience workplace injuries and illnesses that result from unsafe working conditions and often go untreated. The working equids depend on their owners for food and basic care (e.g. hoof trimming and skin care) but the animals' dependency occurs in the absence of human capacity to remedy situations, which, whether driven by economics or lack of knowledge or interest, puts the animals at risk of illness and suffering, and affects the quality of their lives. There is also the possible risk of zoonotic diseases such as rabies from living in close quarters with the working animals, dogs, cows and buffalos. The lack of Government Department actions on behalf of the animals working in the kilns contributes to their sub-optimal well-being.

3.3.2 Environmental Issues for People and Animals Relevant to SDG 3

A WHO report (2022)²¹ provides evidence of what it identifies as the three-fold role of the environment in One Health, noting that "In animal-mediated diseases, the environment plays a threefold role, acting

- as a reservoir where substances are accumulated and transported;
- as a focal point for ecological and chemical processes; and
- as a health mediator where disease agents from the environment are transferred to and affect animals and humans".

Although not all the women provide care to animals, for those who do, having animals at home is an invisible threat to the family members, especially children and new-borns and to older people, as noted in an interview with a woman Doctor and FGDs with wives of the kiln workers.

Because people and animals live and work in close proximity in brick-kiln environments, breathe the same air, eat vegetation grown in the same soil, and drink water from the same sources, it can be assumed that conditions in one domain affect the others. It is apparent from the interviews with Government officials that there is a lack of coordination in their responsibilities and activities for the brick kilns. They have different mandates with respect to matters concerning labour, occupational safety, animal health and environmental matters. Government Departments work in isolation from each other and in some cases utilise multiple resources - human, administrative and financial - for similar ends.

During interviews, officials in the Environment Department were clear in stating that kiln emissions cause harm to people and many studies have demonstrated that cancers can result from breathing polluted air. Similarly, drinking polluted water is known to cause short and long-term illnesses. However, far less is known about the effects of air and water pollution on the working animals or on the natural environment.

A One Health approach requires that Government Departments and people in civil society - such as brick-kiln owners and workers, the public health system and the Veterinary Training Colleges - establish a common base of knowledge and information - and a platform - from which to address these inter-related matters. In a

²¹ [A health perspective on the role of the environment in One Health](#)

discussion, animal owners, their family members and contracts at kiln said they feel the need for information centres which provide information about human and animal health with tips to protect them both from severe weather, especially the extreme heat in the summer. They also expressed that the centre may have videos, posters and cases of best practices from the country and abroad.

4. CONCLUSIONS & RECOMMENDATIONS

4.1. Conclusions

4.1.1. Key Water & Sanitation Issues

The water sources at the kilns are tube-wells: there was no information available on the water quality at the source. Water for household use must be carried by hand to people's homes. In part because of lack of knowledge, human sanitation practices are harmful to people and animals, which live and eat in close proximity to each other. Some of the women deliver children in the same dwellings that the animals inhabit at night, according to a BHU Doctor in Bahawalpur. The women who clean the animals daily also cook and care for the children. The women say they wash their hands between looking after their children and cooking, but verifying this would require further observation. The woman Doctor who was interviewed for the study, who sometimes treats the men and women brick kiln workers, says that "safe drinking water is a dream for this community. The women don't have time to boil water due to their heavy workload at home. Even if the women were to wash their hands and bathe every day (which they cannot do) their environment is polluted with germs and animal waste on the walls, beds, shoes, utensils, and linens, and they cannot remove the germs from their hair and nails." The kiln workers and their wives believe that water causes people to fall ill often.

4.1.2. Key Animal Health & Welfare Issues

The Prevention of Cruelty to Animal act 1890,²² which is meant to protect animals from cruelty including overloading, beating, firing, long working hours, etc. to ensure a safe working environment for the animal. Unfortunately, the legislation is not being implemented with the spirit it designed. Although, the legislation needs a revision to adopt new trends and needs.

Provincial Government Departments claim to deliver an array of programmes to brick kiln animals, but these are dis-jointed, with different responsibilities for each department and no oversight. For example, slips and falls at the kilns are common incidents which have various reasons including overloading, excess working hours, etc. Unfortunately, none of the department considers this their responsibility and have any preventive measurements. As a result, these incidents have multiple consequences. Workplace safety is L&HRD's responsibility to ensure workplace safety under OSH but they do not act on this responsibility.

There is no support for improving physical working conditions for the animals. Excess weight and injury are matters for the Livestock Department to manage, where they provide training and impose penalties.

As is known from other Brooke research as well, the study found that working animals endure difficult conditions including working long hours in the heat and dust, not given enough water during the workday and forced to work even if they are lame or sick. The physical working environment is hazardous to them. There appears to be no understanding that some of the owners' actions could be termed abusive: for example overloading the animals and whipping them so they move faster, and neglecting common medical conditions such as rashes that cause pain and discomfort.

With the exception of the Livestock Department, which has a deworming programme for kiln animals in Lahore, there is little or no provision of Government services for animal care for the working animals in the kilns.

The equid owners at the brick kilns are not aware of zoonotic diseases that can kill their animals and affect their families. They do understand that rabies can be transmitted from animals to people but have no knowledge of how it occurs or of any potential measures to limit outbreaks. It seems safe to assume that brick kiln labourers

²² The Prevention of Cruelty to Animal act 1890

are usually unaware of these hazards. It is also likely that they have no knowledge of other common zoonotic diseases, such as ‘bird flu’ or zoonotic parasites such as ‘hookworm’. There would seem to be a potential danger of human-equine zoonotic diseases²³ in the brick kiln environment. The Centre for Disease Control (CDC) identifies “expanding human populations resulting in closer contact with animals; the roles played by animals in livelihoods, and deforestation and intensive farming; climate change and disruptions in environmental conditions and habitats” as some of the reasons for concern about zoonotic diseases.

4.1.3. Key Human Health Issues

Air and water pollution are thought by the kiln workers interviewed to be linked to frequent illnesses in children and adults at the kiln sites, as noted in Tables O1 and O2. According to the survey data and responses to interview questions and FGDs, air pollution is understood by the workers and Government officials to affect human health. There is a large body of scientific research on air pollution²⁴ at the brick kilns but less on water pollution.

4.1.4. Key Human Labour Issues

These stem largely from the facts of poverty and bonded labour, as noted, inter alia, in a 2017 report by Brooke and the ILO. The men are exploited and must work long hours and days to earn even a meagre living. Although they are technically entitled to time off, their working lives are dominated by the kiln owners’ demands. They are hypothetically entitled to form or join a labour union but, according to a representative of the Labour Education Foundation (LEF) this is impossible in practice. Nor is the legislation on minimum wages applied to brick kiln workers, according to the same LEF representative.

Although the L & HR Department had a short-term project aimed at registering kiln workers for CNICs and the social security benefits that follow from having a CNIC, that was a limited project and is now completed. A member of the Labour Education Foundation noted in an interview that workers do not earn enough to spend on their health and their family’s health. They have no access to credit, and rely on *Peshgi* (advance) for emergency expenses.

Verbatim 09

Due to gaps in the law, none of the animal workers are covered in Social Security, none of them have applied to receive a “Health Card”, and none of them have applied for the Rs. 2,000 relief from the PM’s initiative. The reasons could be no CNIC and no awareness about how to get enrolled in these programs.

Dr. Aman, Brooke-Pakistan, Tarnol

Although it is not considered a ‘labour’ issue, it is important to note that women’s work contributes significantly to animal care and to the household economy, although neither of these is usually acknowledged as ‘work’.

4.1.5. Links between Human and Animal Health

There is an understanding that human health and animal health may be related to each other and to the environment in the brick kilns.

Verbatim 10

Five months ago my donkey was infected with itching. Two other animal workers were infected with itching too. We extensively washed ourselves with “Dettol” and the donkey was also treated (thru BP) with medicines to remove itching.

²³ <https://www.cdc.gov/onehealth/basics/index.htm>

²⁴ See Literature Review Annex 03

Animal Owner, Bahawalpur

The kiln workers and their wives do think that animal and human health may be related, especially in relation to animal waste and human hygiene and fevers (possibly malaria) as well as respiratory problems from the constant dust.²⁵ The animal owners understand that some animal behaviours such as biting can cause illness in people. According to the FGD respondents, they are also aware from experience that an animal with rabies is dangerous to other animals and to people.

The BHU Doctor interviewed commented that “They may keep horses, donkeys, goats and cows in the house or the courtyard, all of which pass urine and faeces all day. Who knows what combinations are developed with all these different wastes and liquids? In the course of a day, all family members walk, sit with and touch animals when they care for them, then get involved in their daily routine. Who knows whether this weakens their immune systems and makes them susceptible to viruses?” She added that “since they have been doing this work for ages, they have no concept of doing things any other way”.

4.2. Recommendations

hereby contributing to the three goals of Brooke Pakistan’s Strategy 2022-2025: (1) transforming equid welfare in communities helping them thrive and become more resilient; (2) influence the visibility and inclusion of equid needs in policy and practices at all levels, including disaster and emergency preparedness and (3) develop sustainable animal health systems that meet the immediate and future needs of working horses, donkeys, and mules.

4.2.1. Creating a Resource Information Base

- There is a need to bring all of the One Health information presently available - on human health, animal health, environmental and economic studies, legal requirements and programmes - into one resource base. Those studies and the findings of this report will contribute to a base of knowledge from which to design and implement a way forward for One Health in the short and medium term. It is hoped that the Literature Review that the Consultant has provided will be included.
- If a One Health approach is to be adopted, it would be useful to establish longitudinal data collection practices in selected brick kiln sites where Brooke Pakistan is active. With relevant metrics, this would provide useful information about the issues related to the SDGs and One Health, such as water and air quality, animal and human health and economic circumstances.. The data could be included in quarterly reports, with baselines established, and periodic updates. The reports could then be shared with Brooke Pakistan’s partners, the CCAC and with Government Departments.
- A One Health approach requires that Government Departments and people in civil society - such as brick-kiln owners and workers, civil-society organisations, the public health system and the Veterinary Training Colleges - establish a common base of knowledge and information - and a platform - from which to address these inter-related matters.
- Based on the IDIs, it is evident that the Environment Department is the most willing and resourceful institution to boost the One Health concept with the help of Brooke. If an inter-departmental coordinated initiative is started, the Environment Department could take the lead.

²⁵ Kamal, A. et al studied the effects of breathing, inhaling and skin exposure to brick-kiln dust, concluding that “The cancer risk model ... and the Incremental Lifetime Cancer Risk model ... suggested that brick kiln workers (including adults and children) were exposed to high-potential carcinogenic risk via both ingestion and dermal contact pathways during the brick making process”. Cancer risk evaluation of brick kiln workers exposed to dust bound PAHs in Punjab province (Pakistan)

- It will be useful to review the L&HR Department’s publication on OSH at the Brick Kilns (mentioned in the IDI) as well as the report on the L&HRD project (2012 - 2020) on efforts to support kiln workers in four Districts of Punjab. These may provide useful ‘lessons learned’ for BP’s efforts. A review of the penalty systems embedded in the livestock and labour laws will also be useful.
- Some follow-up data collection could be useful: for example, more information would be useful on the amounts of debt incurred from *Peshgi* and whether or not this leads to further indebtedness. It would also be useful to learn more about the NGO in Rawalpindi which advances loans to kiln workers (e.g. are the loans only made to contractors who rent animals?)
- More information is needed on the use (including both efficacy and potential dangers) of home remedies to alleviate animal illnesses.
- Since many of the kiln workers are essentially unemployed when the kilns are not operating, it would be beneficial to them to expand their earning/livelihood opportunities.
- Efforts should be made to include the brick kiln workers in national social security schemes, to which they are entitled.
- This could take the form of establishing links to an NGO or a Rural Support Programme that includes livelihood and/or small-business training. SRSO is identified in the Brooke Strategy: this might be extended to NRSP and to the Pakistan Poverty Alleviation Fund, which utilises the World Bank Poverty Scorecard and has extensive experience in disaster relief and reconstruction. Links to the Home-based Workers’ Association for the women could also be explored.
- It could be useful to learn more about how the women in Lahore, who make and sell embroidered items to increase the kiln-worker families’ income, conduct their enterprises.

4.2.2. Animal Health

- BP should establish its priorities regarding One Health, in light of its Strategy, addressing the linkages between human, animal and environmental health.
- BP staff mentioned that a holistic, multi-sectoral approach may be designed and adopted to solve problems and improve the health and well-being of people, animals and the natural environment.
- HBP staff recommended that measures including, but not limited to, training sessions are needed to lower the risk of work-related injuries to animals and risks to the workers. If that is the case it is L&HRD’s responsibility under OSH but they don’t take this responsibility, as they only have to deal with humans and not animals.
- Excess weight and injury are matters for the Livestock Department area to manage, where they provide training and impose penalties. It is worth noting that none of the kiln workers approached the Livestock Department for any support when their animals were injured. BP Staff recommend special training on animal behaviours while eating, sleeping, resting and mating. The animals should be kept in separate places to avoid fighting, if this is possible.
- Brooke should document the best practices from around the world, and arrange exposure visits to increase animal owners’ understanding of good animal care for better income. BP should also inform the animal owners about malpractices such as overloading animals in its capacity building sessions.
- There is a need to link the different Government Departments and officials (e.g. District Vigilance Committees) with responsibilities for human health and animal health with each other, so as to ensure coordination and efficiency in service delivery. This should include the Labour Department and civil-society labour support forums, including the LEF. The latter could be encouraged to highlight environmental and animal health issues in their training and monitoring.

4.2.3. Human Health

- The workers' personal and domestic hygiene practices could be improved with a BCC campaign and the use of soap and disinfectants. However, these are likely to be relatively expensive, given the low wages that the kiln workers earn.
- The health care provider interviewed proposed that a BCC campaign be designed and disseminated. People should be informed about the hazards of poor sanitation in their homes and work environments and should be shown how to maintain clean environments for themselves and for their animals. Since the workers are not literate, the campaign should consist of graphics and verbal information. This approach would also potentially enable the women whose husbands work at the kilns to share their experiences and knowledge: they are presently not allowed to leave their homes. This should include special BCC sessions for women with children, youth, newly married girls, pregnant women and older women as they have different health requirements. Housekeeping and cleaning sessions can add value to their life, and child caring and management can reduce their children's illnesses.
- These practices will ultimately reduce their expenses and time, which they can use to improve care and buy more and better food. If the men are trained in work related health and hygiene practices - e.g. masking, washing, hygiene and animal care - they are likely to be ill less often and be able to spend more time at work and earn more money, which will be good for their families.

4.2.4. Environmental Health

- Because people and animals live and work in close proximity in brick-kiln environments, breathe the same air, eat vegetation grown in the same soil, and drink water from the same sources, it can be assumed that conditions in one domain affect the others. However, the specific inter-connections that may exist need to be determined scientifically. This effect may be negative, as is evident from the survey findings. It may also be positive, in that improvements in one domain - reductions in air pollution or cleaner water sources, for example - will benefit people and working animals. Improvements in animal-health care, although necessary in their own right, may also benefit the people who use the animals for labour. It is possible, although the issue is very complex, that the potential dangers of some zoonotic diseases may be lessened if homes and worksites are improved so that animals and people are optimally clean and healthy. At the least, knowledge that animals and people can be afflicted by the same conditions (for example intestinal worms from soil and water) can lead the way to more effective treatments for both.

4.2.5. One Health

- As noted in the study Proposal, it is hoped that the findings of this study will enable Brooke Pakistan to move forward with its goals of further engaging its consortium partners and Government Departments demonstrating where there may be synergies between their agendas, thus enabling decisions about how best to move the common agenda forward.
- The Brooke Action for Animal Health Mentoring Framework and its existing One Health activities should serve as a basis for its efforts.
- In order to implement a One Health approach, there is a need to move beyond what is already known about sector-specific animal, human and environmental (air, soil and water) health in the brick kiln sector in Pakistan. The deeper need is twofold: to expand scientific knowledge beyond discrete sectors and to link them with each other. There is a significant body of knowledge on air pollution caused by brick kilns (for example, in the Literature Review for this study). WASH (Water, Sanitation and Hygiene) is the focus for numerous CSOs, the Rural Support Programmes and some Government Departments. The health effects of poor sanitation and nutritional deprivation on people are well understood. Beyond

the sector-specific expansion is the need to understand how the three domains are linked with each other.

- There is also a need to link scientific knowledge with “grassroots” knowledge and practice, in order to develop a deeper and more-informed understanding and a knowledge base on which to construct a One Health Strategy. Animal owners should have a voice in designing a One Health approach. Sector-specific needs must also continue to be met if the SDGs are to be achieved.
- It will be important to ensure that women are included in the design and delivery of a One Health approach. Women contribute significantly to the care of the working animals, although they do not consider their work to be a contribution to the household economy. They have some knowledge of the animals’ state of health. The women’s responses to animal health issues are limited to strengthening the feed and informing the men: they have no power to call a veterinarian.
- None of the Government Departments or Brooke has any mechanism or data sharing standards with any of the stakeholders. A Brooke Pakistan key informant suggested that “when the Livestock Department starts a campaign they can coordinate with Brooke and its regional teams to share equine and equid related data to include working animals in their vaccination and welfare programs”.
- Brooke can also provide their inputs (from field-based practices and research) to the Labour, Livestock and Health Departments in drafting and amending their respective laws to include Brookes’ animal welfare concerns. For example, the Livestock Department, as per the law, deals with cruelty and overloading which can also be addressed in the kiln sector with the help of Brooke to deal with working animals for better compliance.

--- End ---

Annexures

TERMS OF REFERENCE (TORs)

The Brooke Pakistan

One Health Gap Analysis in Brick Kilns

1. Background

Brooke is an international animal welfare organisation that works to improve the welfare of 500,000 working equids in brick kilns across South Asia. There are approximately 150,000 kilns employing over 4 million people producing 86% of the world's bricks. Kilns employ traditional techniques where hand-made bricks are transported by animals and baked in coal-fuelled kilns. The work is dangerous, the environment hazardous and the industry unregulated and exploitative.

Using a range of systematic approaches Brooke has identified that conditions are dangerous for both the people and animals working in the kilns and that limited access to human health care and animal health care is common, as are poor living conditions/housing conditions for the animals. In places, 60% of workers live below the poverty line, 80% have no running water and 60% have no latrine facilities²⁶. In addition, brick kilns are huge consumers of coal and emit significant volumes of carbon dioxide. This has huge effects on the health of the environment as well as people and animals.

Pakistan is the third-largest brick-producing country in the world. Brooke Pakistan has first-hand experience of the multi-sectoral issues within the brick kiln industry and has led to the formation of a consortium of international NGOs and regional bodies collectively advocating for human, environmental, and animal issues. The group needs to form a stronger understanding of the links between animal welfare, human labour and the environment to make informed strategic decisions about how best to work together and employ a One Health approach to addressing some of the key issues within the brick kilns such as those linked to the Sustainable Development Goals (e.g. SDG3 Good Health and Wellbeing and SDG1 No Poverty).

One health: One Health is the collaborative approach of multiple professions, together with their related disciplines and institutions – working locally, nationally, and globally – to attain optimal health for people, animals, and the environment. One Health is an approach that recognizes that the health of people is closely connected to the health of animals and our shared environment thereby holistically achieving SDG3.

Components of One Health Approach



Brooke Pakistan is seeking an experienced researcher to conduct research on brick kilns in Pakistan for study below mentioned research questions and come up with tangible findings. He/she is required to submit a detailed research protocol on a given template with a detailed literature review. The successful candidate will be employed as a consultant for the duration of October 2021 to March 2022.

The objective of this short-term consultancy is to assist Brooke Pakistan to understand the most pertinent issues affecting animal health, human health and environmental health within the brick kilns with a special emphasis on One Health

and its links to SDGs 1& 3.

Study objective

- The study aims to identify key health and one welfare issues and how these issues are interlinked.
- To provide a comprehensive understanding of integrated issues and potential solutions using the SDGs as a framework.

Proposed research questions

The research should answer the following questions:

- **What are the key environmental issues** (e.g. kiln technology, ecosystem health, water and sanitation facilities) in brick kilns in the 2020-2021 brick kiln in Pakistan

²⁶ <https://www.thebrooke.org/sites/default/files/Brooke%20News/Brick-by-Brick-Report.pdf>

- **What are the key animal health and welfare issues** (access to and availability of health services) in brick kilns in the 2020-2021 brick kiln in Pakistan
- **What are the key human labour issues** (health and welfare, social rights, labour organisations/unions, increased income/effect on equines, human/animal welfare - priority?, wages rate per thousand bricks, national identity cards, or worker registration in social security schemes, loan availed/bonded labour, losses due to animal morbidity and mortality, access to financial services/schemes, access to and availability of vocational training) in brick kilns in the 2020-2021 brick kiln in Pakistan
- **What are the key human health issues** (e.g. water and sanitation issues – linked to SDG 6, occupational health and safety, access to and availability of health services linked to SDG3) in brick kilns in the 2020-2021 brick kiln in Pakistan
- What are the links amongst these issues and links with the health and welfare of working equines in Brick Kilns
- Detailed stakeholders' mapping to be carried out.

Variations from the research proposal and mitigation measures taken

- The number of survey respondents was increased (Male from 90 to 106 and Female from 45 to 51). Due to the joint family system, there was more than one woman available in a house, so the research team took advantage for better results.
- Since the lead researcher was male, and he wanted to conduct the FGDs himself: he talked to the male kiln workers members and gained their confidence, including their agreement that he interview the women in their families. and All FGDs were handled by the lead researcher. without any hesitation. Even more than the required number of women attended FGDs.
- Rather than using a single quantitative questionnaire for men and women, two different instruments were used, because it was realised that the situations for men and women were different from each other. Women’s perceptions and knowledge, including that of the domestic domain - including care for family members and for animals - are often not included in brick-kiln surveys. The questions for the women were tailored to their lives and activities. This ultimately increased the data collection efforts, resources and analysis.
- A few IDIs were conducted virtually, due to the time limitation and availability of the respondents (i.e. the Livestock and Environment Departments) but the provided information was useful

LITERATURE REVIEW

Introduction

This Literature Review draws on studies on brick kilns in Pakistan and across South Asia. It provides background information on the conditions in brick kilns and the information needed to inform the research tools - FGD Guidelines, the household survey and the In-Depth Interviews - for the study. Much of the information is drawn from Brooke Pakistan and Brooke, as well as studies co-authored with Brooke and others. The references in this review address human and animal working conditions, health considerations for people and equids, and information on environmental situations resulting from brick kiln operations. Information is also drawn from literature relevant to the proposed methodology for the study: this includes AWERB Guidelines and the concept and practice of a One Health approach, as well as studies on the ethics of gathering information from economically-marginal people who use animals for their livelihood. The review also includes scientific studies that address the inter-connections between the animal, human and environmental domains that exist in the brick-kiln sector. It does not assume that potential inter-connections are causal inter-connections.

Understanding the brick-making Industry in Pakistan

Pakistan is the third-largest brick-producing country in the world.²⁷ Although it is unlikely that the exact numbers are known, the usually-quoted figures indicate that there are 20,000 brick kilns in Pakistan.²⁸

The types of kilns in use depend on several factors, such as the age and scale of the kiln, as noted in a report on kilns across South Asia, from 2017.²⁹ Traditional Intermittent Kilns “are small-scale in nature and rely on human labour and in some cases animal traction. Kilns in this type include clamp, scove, scotch and downdraught. Clamp kilns are the oldest type of kilns and are a common feature in less developed countries”.³⁰ 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. Traditional Continuous Kilns have permanent structures and are medium sized 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). Advanced Continuous Kilns include Tunnel, Hoffman and Hybrid Hoffman and Cedan. They are large scale 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. Animals are not used in these kilns and only a limited number of workers are required to operate the different machines”. Some improvements in brick-kiln technologies in Pakistan have been made, according to The Climate and Clean Air Coalition³¹: these changes include “convert[ing] 8,000 of its 20,000 brick kilns to a more efficient “zig zag” technology”. Khan, M. Waseem et al. 2019. Impact of brick kilns industry on environment and human health in Pakistan. In another study, Khan, M. W. concludes³² that “Traditional Brick kilns in which rubber is used as a fuel is the most harmful and Contemporary Brick Kilns are the safest types of brick kiln”.

Working Conditions Affecting Human Health

Bonded labour in brick kilns is a deeply rooted practice in Pakistan. A 2004 study by PILER³³ provides a useful overview of research on the brick kiln sector since the 1980s and a useful glossary of terms for the subsets of brick-kiln labour. The industry is a means of livelihood for a large rural and semi-urban population. It is an especially crucial means of livelihood for some of the most vulnerable and poorest sections of society, the

²⁷ Pakistan moves toward environmentally friendly and cost-effective brick kilns | Climate & Clean Air Coalition

²⁸ Pakistan | Brooke

²⁹ Environment, Human Labour & Animal Welfare - ILO International Labour Office; The Brooke Hospital for Animals; The Donkey Sanctuary. - Geneva: ILO, 2017.

³⁰ *Ibid.*

³¹ Improved Kiln Technology Delivers Environmental Benefits and Drives Generational Change in Pakistan's Brick Sector | Climate & Clean Air Coalition

³² Impact of brick kilns industry on environment and human health in Pakistan Science of The Total Environment, Elsevier, Vol 678, pp 383-389.

³³ Unfree labour in Pakistan: Work, debt and bondage in brick kilns

majority of whom are migrant or seasonal workers. This industry contributes 1.5 percent to Pakistan's GDP and provides livelihoods to about two million people, largely as an informal sector.³⁴

Studies in Afghanistan, India, Nepal and Pakistan have found that the majority of brick kiln workers are illiterate and belong to the most economically and socially vulnerable groups in society. They work in hazardous environments and are bound up in multi-generational poverty. The health of brick kiln workers is made worse due to the often remote kiln locations and the lack of available healthcare. Adults and children are caught in a vicious cycle: children are put to work when they are young and inherit the debts of their parents. Studies on brick kiln workers in Pakistan have shown that they are exploited economically. An Al Jazeera report notes that “the money they owe keeps increasing, spiralling out of reach, thus keeping them and future generations in debt. Reasons for this can include high interest on the amount borrowed, low wages further cut due to corrupt officials, increasing and unlawful deductions, and forged entries into the books that the workers do not get to see”.³⁵

A 2004 study noted that “brick kilns across [Pakistan] depend on the labour of children (10-14 years) ... and of male adolescents (14 –17 years) in other work groups. Female children not working at the kiln perform domestic chores to free up older family members for kiln work. If a criterion for unacceptable child labour is the denial of primary education, then virtually all children, like their parents before them, are so employed”³⁶.

Working conditions for people and animals in the brick kiln sector in Pakistan and across South Asia have many detrimental effects for human and animal health. People and animals work long hours performing physically demanding tasks without the appropriate equipment.³⁷ Brick kiln workers often have to carry heavy loads of clay and bricks on their backs from one place to another, in extremely hot or cold weather conditions. Workers are not provided with safety equipment, or weather-appropriate clothing which would allow them to perform their designated tasks more comfortably. This, coupled with extremely long working hours, can result in exhaustion and fatigue as well as ... joint pains, muscle pain, gastro-intestinal diseases and even stunted growth”.³⁸

One study found that there was a 29% prevalence of respiratory diseases and 16% prevalence of asthma amongst workers in Bangladesh's brick kiln workers. 15% of the respondents suffered from chronic bronchitis, 4% suffered from coughing, and around 10% suffered from more than one type of illness (Rahman S. et al, 2017). Kamal, A. et al studied the effects of breathing, inhaling and skin exposure to brick-kiln dust, concluding that “The cancer risk model ... and the Incremental Lifetime Cancer Risk model ... suggested that brick kiln workers (including adults and children) were exposed to high-potential carcinogenic risk via both ingestion and dermal contact pathways during the brick making process”.³⁹

Gastro-intestinal worms are commonly found in rural areas in Pakistan⁴⁰ A study on intestinal parasites in children <5 in Karachi noted⁴¹ that “poverty, illiteracy, poor hygiene, lack of access to potable water and hot and humid tropical climate are the factors associated with intestinal parasitic infections” and found that “the prevalence of Intestinal parasitic infections was estimated to be 52.8% (95% CI: 46.1; 59.4). *Giardia lamblia* was the most common parasite followed by *Ascaris lumbricoides*, *Blastocystis hominis* and *Hymenolepis nana*. About 43% [of] children were infected with [a]single parasite and 10% with multiple parasites.”

Occupational safety: An ILO study identified five major categories of occupational hazards within the brick industries of Afghanistan, Pakistan, and Nepal; These were: safety hazards (e.g. wet surfaces, use of power tools); chemical hazards (e.g. exposure to toxic gases, smoke and other harmful chemical agents); physical hazards (e.g. exposure to extreme heat and cold, poor ventilation and electricity); ergonomic hazards (e.g.

³⁴ *Ibid.*

³⁵ Ghani, F. 2019. The spiralling debt trapping Pakistan's brick kiln workers | Human Rights | Al Jazeera.

³⁶ https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---declaration/documents/publication/wcms_082028.pdf child labour

³⁷ Environment, Human Labour, and Animal Welfare – Unveiling the Full Picture of South Asia's Brick Kilns and Building the Blocks for Change/ International Labour Office; The Brooke Hospital for Animals; The Donkey Sanctuary. - Geneva: ILO, 2017.

³⁸ *Ibid.*

³⁹ Cancer risk evaluation of brick kiln workers exposed to dust bound PAHs in Punjab province (Pakistan)

⁴⁰ *Ibid.*

⁴¹ Mehrj et al. 2008. Prevalence and Factors Associated with Intestinal Parasitic Infection among Children in an Urban Slum of Karachi - PMC

lifting and moving heavy loads, continuous and repetitive motions, awkward postures) and biological hazards (e.g. contact with biological waste, noxious plants or animals). The same study notes that the lack of proper safety measures in South Asian brick kilns also causes a number of accidental deaths and injuries due to workers falling from large heights or slipping on uneven surfaces. A study of 93 workers in five kilns in Pakistan found that fracturing and death due to falls from carts and kiln roofs was not out of the ordinary.⁴²

The Labour and Human Resource Department of Punjab has had a project in place (2012 - 2020) to provide non-formal literacy classes to brick-kiln workers and to provide them with CNICs, birth certificates, access to health and hygiene services, and veterinary care⁴³ as part of its efforts to eliminate bonded labour in four Districts, one of which is Bahawalpur, which will be included in this study. The L&HRD Department estimates that “an average of 30 to 35 families are deployed at each brick kiln ... with an average family size of 6 to 7 with at least 3-4 children in a family”. Most of these children also work in the industry, as they become strong enough to do so.

Animal Health

At the kiln site donkeys are made to carry heavy loads of wet soil and baked bricks without using proper harnesses. This commonly leads to the development of spine issues and injury in donkeys. Other health problems faced by donkeys in the brick kiln industry include respiratory illnesses, weakness and fatigue due to being overworked, and skin infections due to lack of sanitization. The animals are made to work long hours in extreme heat, without access to drinking water, leading to immense heat stress. Donkeys also experience dire living conditions before they are sold, being kept in crowded spaces with little to no ventilation.⁴⁴ The same study found that “another major factor leading to rapid health deterioration amongst donkeys, is excessive abuse by their owners. Donkeys have a pain response that is not as obvious as that of horses and mules, which is why their owners often tend to use kicking and whipping to get the animal to perform a desired task. The long-term effect of this abuse is that the animal suffers bruises and injuries which make it weaker and less useful.”⁴⁵

It is very common for donkey owners to rely on home remedies, such as pouring hot oil on wounds and rubbing chilli powder into the eyes to prevent watering. Needless to say, such ‘remedies’ are ineffective and only cause more suffering for the animal.

A study on working-donkey health in Peshawar found that donkeys in brick kilns “work for about 12 hours a day, six days a week.”⁴⁶

A study on animals working in brick kilns in Nepal found that one of the most common skin alterations found in working equines was scarring. There was also a high proportion of hobbling and tethering, which became worse over time, especially when an equid [was] working continuously for an entire brick kiln season.

A scientific study by Camara et al⁴⁷ identifies the numerous viral diseases that can afflict donkeys and mules, noting that “in many cases, donkeys and mules are treated like horses, with the physiological differences between these species usually not taken into account. Most infectious diseases that affect the *Equidae* family are exclusive to the family, and they have a tremendous economic impact on the equine industry. However, some viruses may cross the species barrier and affect humans, representing an imminent risk to public health”.

⁴² Environment, Human Labour, and Animal Welfare – Unveiling the Full Picture of South Asia’s Brick Kilns and Building the Blocks for Change/ International Labour Office; The Brooke Hospital for Animals; The Donkey Sanctuary. - Geneva: ILO, 2017.

⁴³ Elimination of Bonded Labour in 4 Districts of Punjab

⁴⁴ Environment, Human Labour, and Animal Welfare – Unveiling the Full Picture of South Asia’s Brick Kilns and Building the Blocks for Change. International Labour Office; The Brooke Hospital for Animals; The Donkey Sanctuary. - Geneva: ILO, 2017.

⁴⁵ Environment, Human Labour, and Animal Welfare – Unveiling the Full Picture of South Asia’s Brick Kilns and Building the Blocks for Change. International Labour Office; The Brooke Hospital for Animals; The Donkey Sanctuary. Geneva: ILO, 2017.

⁴⁶ Khan, S. Donkey management and utilisation in Peshawar, Pakistan. Brooke Hospital for Animals, Ko'ragh Chowk, Sugar Mills Road, Mardan, Peshawar, Pakistan

⁴⁷ Camara, R.J.C et al. 2020. Viral Diseases that Affect Donkeys and Mules - PubMed

Gastro-intestinal worms are also prevalent in donkeys.⁴⁸ A study on donkey diseases states that “donkeys and mules can act as reservoirs spreading many viral, bacterial, and parasitic infectious respiratory diseases. Mosquito and tick-borne encephalitis have been reported in these species in the later years, and even donkeys are being used as sentinels in some areas to detect these emerging diseases”.⁴⁹

Donkeys are the most common working equids used in the brick making industry in Pakistan. Donkeys can be bought at significantly lower prices than horses or mules.⁵⁰ “The weaker a donkey is, the less it costs. Brick kiln workers buy donkeys to help them with all stages of labour related to brick production with domestic chores. This means that the animal is under constant use, and is rarely given the opportunity to rest, which leads to immense bodily stress being experienced by the animal, causing it to become fatigued, sick and even dying much earlier than it should”.⁵¹

At the kiln site donkeys are made to carry heavy loads of wet soil and baked bricks without using proper harnesses. This commonly leads to the development of spine issues and injury in donkeys. Other health problems faced by donkeys in the brick kiln industry include respiratory illnesses, weakness and fatigue due to being overworked, and skin infections due to lack of sanitization. The animals are made to work long hours in extreme heat, without access to drinking water, leading to immense heat stress. Donkeys also experience dire living conditions before they are sold, being kept in crowded spaces with little to no ventilation.⁵²

Another major factor leading to rapid health deterioration amongst donkeys, is excessive abuse by their owners. Donkeys have a pain response that is not as obvious as that of horses and mules, which is why their owners often tend to use kicking and whipping to get the animal to perform a desired task. The long-term effect of this abuse is that the animal suffers bruises and injuries which make it weaker and less useful. [ILO 2017] It is very common for many donkey owners to rely on home remedies, such as pouring hot oil on wounds and rubbing chilli powder into the eyes to prevent watering. Needless to say, such ‘remedies’ are ineffective and only cause more suffering for the animal”.⁵³ A study on Nepalese brick kilns⁵⁴ found that one of the most common skin alterations found in working equines was scarring. There was also a high proportion of hobbling and tethering, which became worse over time, especially when an equid is working continuously for an entire brick kiln season⁵⁵.

Costs and accessibility problems of animal healthcare

Research conducted by Brooke Pakistan and others indicates that animal care is very expensive relative to kiln-workers’ earnings, and that brick kiln workers and their equids are often sick. High poverty rates make it likely that people are food insecure, animals are not properly fed and veterinary care is unaffordable. Khan’s study (no date) of kiln donkeys in Peshawar found that donkeys suffer from “saddle sores ... are heavily infested with endoparasites and ... are under-fed and debilitated.” They are “fed wheat straw and rice husks which contain few nutrients and their hooves are not shod and are filled with gravel.”

Brick kiln workers in the Faisalabad region who owned working animals, were among those interviewed in a Brooke study⁵⁶ on accessing health-related care for their animals. When respondents were asked to rank their spending priorities, they identified ‘animal health’ as the 6th of seven priorities.

In the same study, the importance of women in maintaining animal health in the workplace was reported by some respondents, although others noted that women were not skilled in handling equids. Women were credited with the early detection of animal illness and with informing their husbands of the need to get specialised care for animals. Donkeys, however, were considered to be strong animals which are able to

⁴⁸ <https://www.thebrooke.org/our-work/pakistan> 2015

⁴⁹ *Ibid.*

⁵⁰ Khan, S. Donkey Management and Utilisation in Peshawar, Pakistan. n.d.

⁵¹ The Economic Contributions of Working Donkeys, Horses and Mules to Livelihoods

⁵² Environment, Human Labour, and Animal Welfare – Unveiling the Full Picture of South Asia’s Brick Kilns and Building the Blocks for Change/ International Labour Office; The Brooke Hospital for Animals; The Donkey Sanctuary. - Geneva: ILO, 2017.

⁵³ *Ibid.*

⁵⁴ Norris et al. 2020. [A New Framework for Assessing Equid Welfare: A Case Study of Working Equids in Nepalese Brick Kilns](#)

⁵⁵ *Ibid.*

⁵⁶ Service Seeking Behaviour of Equine Owning Communities in Brooke Pakistan Areas of Operation (2021).

recover from illnesses without professional care. In terms of accessing expert care for sick animals, women are often the ones to identify illness or wounds in the animals that they care for (which does not however include working donkeys). Many respondents reported the use of traditional medicines (many of them food items) when their donkeys fall sick. This was attributed to the difficulty of reaching a veterinarian or a “paravet”, and the resulting expense if they did find care. Veterinarians are considered too expensive and respondents resented the need to pay what they consider to be high fees and prices for medicines, especially when they are not always able to cure animal illnesses. Several respondents noted that doctors for livestock do not have medicines for equines and do not know how to treat equine diseases. One brick kiln worker said he “spent money reserved for feed on medicines, resulting in less feed being given to the animals”.

Zoonotic diseases

There is a potential danger of human-equid zoonotic diseases⁵⁷ in the brick kiln environment. The Centre for Disease Control (CDC) identifies “expanding human populations resulting in closer contact with animals; the roles played by animals in livelihoods, and deforestation and intensive farming; climate change and disruptions in environmental conditions and habitats” as some of the reasons for concern about zoonotic diseases. Examples given are: Rabies, *Salmonella* infection, West Nile virus infection, Q Fever (*Coxiella burnetii*), Anthrax, Brucellosis, Lyme disease, Ringworm and Ebola.⁵⁸ Glanders is another zoonotic disease. It seems safe to assume that brick kiln labourers are usually unaware of these hazards.

Effects of Brick Kilns on the natural environment

The far-reaching effects of brick-kiln emissions are captured in an ICIMOD study, which notes that “Inefficient combustion in traditional kilns results in high levels of emissions that not only affect local environment and communities but also gradually impact regional air quality that ultimately contributes to the melting of glaciers”.

The negative effects of the air, soil and water pollution, arising from burning tires and other hazardous materials, and from disturbing the soil to collect material to build bricks, are harmful to the well-being of animals and people. The conditions are especially hard on the growing bodies of children and young animals. If the kiln is adjacent to farm land, it is possible that people and animals are drinking water that contains fertilisers or pesticides.

Brick kilns are understood to have many deleterious effects on air, soil and water quality. The industry contributes to the airborne release of particulate matter⁵⁹ as a result of burning tires, amongst other items. A study on brick kilns in Nepal found that “Brick kilns primarily emit PM, CO, SO₂, volatile organic compounds, nitrogen oxides (NOX), and heavy metals depending on the type of fuel burnt” [22]. A study conducted in Bangladesh observed the emissions of PM₁₀ and PM_{2.5} by Bangladeshi brick kilns from November 2012 to November 2017. It was observed that emissions of particulate matter were significantly high, especially in the dry winter season, when they exceeded the Bangladeshi National Ambient Air Quality Standards, set by the World Health Organisation⁶⁰ (Rahman S. 2017).

The brick industry has also been shown to be detrimental to soil and vegetation due to the harmful gases released by the industry. A study conducted along the Kshipra River in India, found that vegetation is often slashed and burned in order to dig for clay at the brick kiln site. This renders the land useless as the soil is ruined and crops can no longer be grown in the area.⁶¹ Another important impact of the brick industry is on soil quality, as the fertile topsoil is removed and used to make bricks. One study found that each year, the loss of agricultural soil due to brick-making causes 11,000 people to suffer from loss of food grain in Bihar, India.⁶² It is not known whether there is any data on this for Pakistan.

⁵⁷ <https://www.cdc.gov/onehealth/basics/index.htm>

⁵⁸ *Ibid.*

⁵⁹ Particulate matter such as PM₁₀ and PM_{2.5} is described as particles of solid or droplets of liquid that are extremely small and easily inhalable.

⁶⁰ Rahman, S. M.Sc. Thesis. n.d. Air Quality and health effects of kilns’ emissions on brick field workers in northern Dhaka, Bangladesh. Environmental System Analysis, Wageningen University and Research (Netherlands) Air Quality and health effects of kilns’ emissions on brick field workers in northern Dhaka, Bangladesh Environmental System A

⁶¹ Environment, Human Labour, and Animal Welfare – Unveiling the Full Picture of South Asia’s Brick Kilns and Building the Blocks for Change

⁶² *Ibid.*

Brick kilns release toxic gases as well as particles like black carbon and atmospheric ozone (O₃): these have been shown to affect the weather patterns of South Asia. The industry has had an impact on rainfall during the monsoon season, as well as regional and global warming. [ILO 2017] The release of harmful gases and particulate matter may be linked to the development of respiratory illnesses among kiln workers. These illnesses include chronic cough, shortness of breath, asthma and chronic bronchitis, as noted earlier. The release of these and other toxic gases is largely due to incomplete combustion of fuel which occurs during the firing process of brick-making. Most brick kilns in South Asia lack a proper structure that allows ventilation, which leads to mixing of air and fuel as well as incomplete combustion. [ILO 2017] The impact of [Black Carbon] can be up to 1,500 times more damaging to our climate than carbon dioxide emissions and is a significant contributor to global warming and detrimental to public health. It is telling that the United Nations Environment Programme and Climate and Clean Air Coalition's (CCAC) Air Pollution in Asia and the Pacific: Science-based Solutions (2019)⁶³ report identifies the brick sector as one of 25 areas that governments can address to rapidly reduce air pollution.”⁶⁴ Air quality standards for Punjab were established in 2016⁶⁵ but it is not clear whether these apply to brick kiln emissions or, if so, whether and how they are monitored.

⁶³ Pakistan moves toward environmentally friendly and cost-effective brick kilns | Climate & Clean Air Coalition

⁶⁴ Environmental and Occupational Pollutants and Their Effects on Health among Brick Kiln Workers

⁶⁵ <https://epd.punjab.gov.pk/system/files/>

NOTIFICATION_REGARDING_THE_PUNJAB_ENVIRONMENTAL_QUALITY_STANDARDS_FOR_INDUSTRIAL_GASEOUS_EMISSIONS%20%281%29.pdf

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1. *Pakistan moves toward environmentally friendly and cost-effective brick kilns | Climate & Clean Air Coalition*
2. *Environment, Human Labour, and Animal Welfare – Unveiling the Full Picture of South Asia’s Brick Kilns and Building the Blocks for Change/ International Labour Office; The Brooke Hospital for Animals; The Donkey Sanctuary. - Geneva: ILO, 2017.*
3. *Unfree labour in Pakistan: Work, debt and bondage in brick kilns*
4. *Environment, Human Labour, and Animal Welfare – Unveiling the Full Picture of South Asia’s Brick Kilns and Building the Blocks for Change/ International Labour Office; The Brooke Hospital for Animals; The Donkey Sanctuary. - Geneva: ILO, 2017.*
5. *Cancer risk evaluation of brick kiln workers exposed to dust bound PAHs in Punjab province (Pakistan)*
6. *Prevalence and Factors Associated with Intestinal Parasitic Infection among Children in an Urban Slum of Karachi - PMC*
7. *Donkey management and utilisation in Peshawar, Pakistan. Brooke Hospital for Animals, Ko'ragh Chowk, Sugar Mills Road, Mardan, Peshawar, Pakistan*
8. *Viral Diseases that Affect Donkeys and Mules - PubMed, Camara, R.J.C et al. 2020.*
9. *Donkey Management and Utilisation in Peshawar, Pakistan, Khan, S.*
10. *The Economic Contributions of Working Donkeys, Horses and Mules to Livelihoods*
11. *A New Framework for Assessing Equid Welfare: A Case Study of Working Equids in Nepalese Brick Kilns, Norris et al. 2020.*
12. *Service Seeking Behaviour of Equine Owning Communities in Brooke Pakistan Areas of Operation (2021).*
13. *Air Quality and health effects of kilns’ emissions on brick field workers in northern Dhaka, Bangladesh. Environmental System Analysis, Wageningen University and Research (Netherlands) Air Quality and health effects of kilns' emissions on brick field workers in northern Dhaka, Bangladesh Environmental System A*
14. *Environment, Human Labour, and Animal Welfare – Unveiling the Full Picture of South Asia’s Brick Kilns and Building the Blocks for Change*
15. *Better Brick Nepal (BBN) Standard, Final | August 2015*
16. *POKHARA, Joint Outcome Statement, 2017*
17. *Brick Initiative, Towards an environmentally just and socially equitable brick industry in South Asia An overview of ICIMOD’s interventions in the brick sector, ICIMOD, Nepal.*
18. *FACT SHEET, Brick sector in Pakistan, ICIMOD, 2019*
19. *FIXED Chimney, Bulls Trench Kiln, Facts Sheets about Brick Kiln in South and SouthEast Asia*
20. *Understanding Zig-Zag Kiln, Anil Agarwal Environment Training Institute.*
21. *Mapping Brick Kilns to Support Environmental Impact Studies around Delhi using Sentinel, MDPI*
22. *Air Quality and health effects of kilns’ emissions on brick field workers in northern Dhaka, Bangladesh, Dr. Andre van Amstel ESA & Dr. Michiel van der Molen MAQ.*
23. *Status of Drinking Water Quality and its Contamination in Pakistan | Insight Medical Publishing.*
24. *Kakkar, M. A.S. Chauhan et al. 2019. Opportunities for One Health policies to reduce poverty. https://doc.woah.org/dyn/portal/digidoc.xhtml?statelessToken=rZ-9cJ-PGQvc52nW4a_ED3J_SCMijwc2dEKcgIkrWzY=&actionMethod=dyn*

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1. *Bricked by Bricks, Plight of Brick Kiln Workers, A Survey of 324 Brick Kilns in Eight Districts of Punjab to Assess, Compliance with National Labour Laws and International, Labour Conventions Covered by GSP Plus.*
2. *Need Assessment Survey, The Brooke Pakistan, Zahir Shah- September 2018*
3. *Brick by Brick, Environment, Human Health and Animal Welfare, Brooke, 2017*
4. *Fostering Sustainable Development to Transform the Brick kiln Industry, South Asia*
5. *Brick by Brick Regional Brick Kiln Advocacy Brick by Brick, 1st Regional Advocacy Workshop, Kathmandu, March 2015*
6. *Brooke, Strategic Plan Country, Regional Narrative, 2022-2025*
7. *Fostering sustainable development to transform the brick kiln industry in South Asia, Brooke/GFI, Nepal*
8. *Misc. Frame works on One Health, Centre for Disease Control and Prevention.*
9. *One Health at Brooke Case Study – Our Work in Brick Kilns – a threat to humans, animals and the environment, Brooke*
10. *Catalysing Emissions Reduction in Brick Manufacturing in Bangladesh*
11. *Environmental and Occupational Pollutants and Their Effects on Health among Brick Kiln Workers*
12. *Donkey management and utilisation in Peshawar, Pakistan, Shahabat Khan*
13. *Articles on Donkey Disease.*
14. *Environment, Human Labour & Animal Welfare Unveiling the full picture of South Asia's brick kiln industry and building the blocks for change, 2017*
15. *Viral Diseases that Affect Donkeys and Mules, Rebeca Jéssica Falcão Câmara*
16. *A New Framework for Assessing Equid Welfare, A Case Study of Working Equids in Nepalese Brick Kilns. Stuart L. Norris*

IN DEPTH INTERVIEW TRANSCRIPTS

01 Dr Ayesha, at BHU, Bahawalpur

In an interview, a Local Health Service Provider (DHQ, Dispensary, Bahawalpur) noted that there is a strong connection between keeping and caring for animals at home, and people's health. For example, "safe drinking water is a dream for this community. The women don't have time to boil water due to their heavy workload at home. Even if the women were to wash their hands and bathe every day (which they cannot do) their environment is polluted with germs and animal waste on the walls, beds, shoes, utensils, and linens, and they cannot remove the germs from their hair and nails".

"They may keep horses, donkeys, goats, cows and hens in the house or the courtyard, all of which pass urine and faeces all day. Who knows what combinations are developed with all these different wastes and liquids?". In the course of a day, all family members walk, sit with and touch animals when they care for them, then get involved in their daily routine.. Who knows whether this weakens their immune systems and makes them susceptible to viruses?". She added that "since they have been doing this work for ages, they have no concept of doing things any other way".

02 Labour and Human Resource Department L&HRD

a. Director, CIWCE⁶⁶, L&HRD, Lahore - 11 August, 2022

Is there any specific legislation for brick kilns other than the Factories Ordinance? What is the legislation to support and protect the kiln environment, workers and animals?

All labour laws are applicable to the brick kilns and there is specific legislation for brick kilns "The Punjab Prohibition of Child Labour at Brick Kilns Act, 2016". There was a government project IBLIC-1 and IBLIC-IV which catered to the needs of animal protection and welfare.

Does your role include responsibility for brick kiln environments? If yes, what is included in that role?

Yes, the Inspector of Factories also ensures a healthy environment at the brick kilns including dues, fire safety, smoke, etc.

Does your Department play any role in encouraging brick kiln owners and managers to improve labour practices? If so, please say what that role includes.

There are KPIs for field formation to hold District Vigilance Committee meetings once in a month to discuss and resolve the issues of bonded labour and allied matters at the brick kilns. Moreover, field formation also ensures the welfare grants and other incentives for the brick kiln workers. The brick kiln workers are also empowered under the law to form their trade unions and collective bargaining agents.

Does the Province's OSH legislation apply to the brick kilns environment? If it does, how do you monitor issues? Field formation monitors the occupational and safety provisions of law applicable to brick kilns in their inspection module at par with the other sectors.

Is there any specific legislation for working animals in Punjab? Are there any occupational accidents related to working animals at kilns? How do you deal with these? The Punjab Animal Health Act, 2019.

⁶⁶ Centre for the Improvement of Working Conditions and Environment (CIWCE)

Are the animals used at the kilns covered under any law or policy administered by the L&HRD? If so, how are these monitored and what are the results? There is no labour legislation pertaining to the animals.

Is your Department aware of any common illnesses that affect kiln-workers' ability to work? If so, what are they? What are the long-term effects of ensuring workers' health and safety within the brick industry?

Yes, field formation has sufficient knowledge regarding workers at brick kilns' occupational diseases. By ensuring the health and safety of brick kiln workers it will enhance the productivity and quality of life of the workers.

Is there any orientation or capacity building program offered by your Department for animal welfare, health or load managing skills? No

Have you ever trained the owners of working animals at the Brick Kilns for the welfare of their animals? No

In terms of possible perceived links between human and environmental factors, do you consider that these issues affect each other? Can you give some examples?

There are many links with the environment and human beings, especially the working environment directly affects the workers with occupational diseases.

How are the Labour wages and working hours controlled in the brick kiln Sector?

The labour wages and working hours of brick kiln workers are regulated at par with other sectors.

Is there a mechanism to measure, control and manage wages and hours of animal owners and their animals? No.

At what level and standard, brick kiln workers (especially animal owners) are included in social security institutions, if not why? The animal owners/workers are included in social security institutions at par with other brick kiln workers.

Are you familiar with a One Health Approach to addressing human, animal and environmental issues? No

Do you think having a One-Health Approach near a cluster of kilns would be a good idea? How, Why not? Yes, the idea of a One-Health Approach is good.

Have you ever requested the authorities (Livestock, Environment or Animal Welfare Department) to make changes in the law to include working animals at Brick Kilns? No

Have you ever coordinated with the Livestock Department to accompany them to Brick Kilns to search and inspect working animal issues? No

The L&HRD website mentions the provision (since 2021) of a Labour Card for Workers. Does this apply to brick kiln workers? If so, are there plans to roll out the provision of the cards? No

According to L&HRD project (2012 - 2020) non-formal literacy classes were provided to brick-kiln workers. They were also provided CNICs, birth certificates, access to health and hygiene services, and veterinary care as part of its efforts to eliminate bonded labour in four Districts of Punjab.

What is the status now? The Project of EBLIC-IV has been completed.

b. OSH Specialist, CIWCE, Lahore Labour and Human Resource Department L&HRD

Is there any specific legislation for brick kilns other than the Factories Ordinance? What is the legislation to support and protect the kiln environment, workers and animals?

There is no specific law for Brick Kiln workers but as per definition of Factory all brick kilns are included in Factories. Therefore, all Labour Laws are applicable on Brick kilns and their workers. No Labour law is available for protection of equines (Animals).

Does your role include responsibility for brick kiln environments? If yes, what is included in that role?

SAACIWCE has no role in implementation or inspection of Brick Kiln Environment. SAACIWCE is playing the role of facilitator for those factories which invite them for training and testing.

Does your Department play any role in encouraging brick kiln owners and managers to improve labour practices? If so, please say what that role includes. Yes. The Labour Department has initiated project related to eradication of Child Labour from Brick Kilns and education of children from families of brick kiln workers.

Does the Province's OSH legislation apply to the brick kilns environment? If it does, how do you monitor issues? Yes. The Punjab Occupational Safety and Health Act, 2019 applies to all workers of brick kilns. The issue will be monitored through risk assessment. Regular inspection under this law will be conducted by field staff of the Labour and HR Department.

Is there any specific legislation for working animals in Punjab? Are there any occupational accidents related to working animals at kilns? How do you deal with these? No labour law is available for the safety of working animals.

Are the animals used at the kilns covered under any law or policy administered by the L&HRD? if so, how are these monitored and what are the results? As at serial No. 5

Is your Department aware of any common illnesses that affect kiln-workers' ability to work? If so, what are they? What are the long-term effects of ensuring workers' health and safety within the brick industry?

SAACIWCE has a publication on safety at Brick Kilns

Is there any orientation or capacity building program offered by your Department for animal welfare, health or load managing skills? No.

Have you ever trained the owners of working animals at Brick Kilns for the welfare of their animals? Never.

In terms of possible perceived links between human and environmental factors, do you consider that these issues affect each other? Can you give some examples?

Yes they do affect each other. The Environment affects humans directly. For example, if the concentration of gasses like CO, CO₂, NO_x, SO₂, H₂S etc. increase in air this will cause serious health issues in humans. Similarly, if concentration of water pollutants increases in drinking water this will have negative health effects. At the same time humans are contributing to environmental pollution by their industrial activities. Smoke from brick kilns is increasing the pollution load in the environment.

How are Labour wages and working hours controlled in the Brick kiln Sector? No Idea.

Is there a mechanism to measure, control and manage wages and hours of animal owners and their animals? No Idea.

At what level and standard, brick kiln workers (especially animal owners) are included in social security institutions, if not why? No Idea.

Are you familiar with the One Health Approach to addressing human, animal and environmental issues? No Idea.

Do you think having a One-Health Approach near a cluster of kilns would be a good idea? How, Why not? No Idea.

Have you ever requested the authorities (Livestock, Environment or Animal Welfare Department) to make changes in the law to include working animals at Brick Kilns? No Idea.

Have you ever coordinated with the Livestock department to accompany them to Brick Kilns to check and inspect working animals issues? No Idea.

The L&HRD website mentions the provision (since 2021) of a Labour Card for Workers. Does this apply to brick kiln workers? If so, are there plans to roll out the provision of the cards? No Idea.

According to the L&HRD project (2012 - 2020) non-formal literacy classes were provided to brick-kiln workers. They were also provided CNICs, birth certificates, access to health and hygiene services, and veterinary care as part of its efforts to eliminate bonded labour in four Districts of Punjab. What is the status now? No Idea.

03 Director General, Environment Department, Punjab

Do the Punjab Environmental Quality Standards (2016) apply to brick kilns?

The Law is a generic law to cover all environments and related issues. Brick Kiln is one the main sources of pollution in the form of bad air or smoke. Brick kilns are one of the key stakeholders in environmental protection.

If so, how are the standards monitored and how would you rate compliance with the Standards?

The Environmental Department has its own instruments and standards to measure different environments, so we have [these] for brick kilns to measure air pollution.

Are any revisions/updates to the Punjab Environmental Quality Standards being considered that might affect brick kilns?

We do revise our standards but unfortunately, I don't remember any new standard introduced or upgraded for the brick kiln sector.

Does your Department play any role in encouraging brick kiln owners, managers and workers to improve the natural environment?

We do conduct awareness sessions for kiln owners and managers to improve the kiln environment. But enforcement of law is not our mandate: it is done by L&HRD.

Our sessions are only limited to the environment: We talk about the overall environment of the kiln which is mainly around smoke. The health of humans and animals is no doubt linked with this environmental issue but it's not our mandate to talk about their health, I think this should be done by the Health Department.

Do you think there are any interlinked environmental or human-health issues at the brick kilns? If yes, what are those? As said earlier, it's very obvious that every living object at a kiln is affected by the bad environment. If the environmental standards are in control, it will affect everyone's health.

How long does it take for the soil and vegetation to recover when soil extraction for brick-making happens? No answer.

Do you think that having knowledge of environmental 'best practices' would be beneficial to the brick making industry, its workers and the people residing near the kilns?

There are many things which need improvements. Land degradation, control smoke to avoid respiratory system, control of dealing with heat to control skin diseases, etc. There are best practices in South East Asia i.e. India and Nepal, they have introduced new technology to manage heat treatment which ultimately controls smoke and the environment. We should introduce these practices here. Unfortunately, we don't have such practices that each Department does their research and brings the best practices. There are NGOs who do this for us, but we don't have such resources for R&D and ultimately implement these practices here.

Does the Department of the Environment have any responsibility to minimise these issues? Yes, this is our core responsibility.

Does the kiln owner have any responsibility?

Yes, they are equally responsible but they don't understand: their only concern is to save money. They use all those means to save money (tires, rubber shoes, other harmful material to keep their furnace hot and alive) which affects the environment and ultimately humans and animals

Are you aware of any common illnesses experienced by brick kiln workers that might be linked with environmental factors? If so, what are they?

There are many things which need improvement. Land degradation should be monitored by the Land Department. We only inform people about the environmental issue. Control is not in our hands. Smoke should be controlled, etc.

Are working animals covered under any law or policy, as they are also affected by the environment and have an effect on it? No, it is neither covered in any policy or law, nor is it our mandate. But this is understood, a bad environment affects everyone.

What could be the long-term effects of ensuring environmental protection in the brick industry? No clear answer

Are you familiar with a One-Health Approach to addressing human, animal and environmental issues? Do you think having a One-Health Approach would have a good multi-dimensional impact on environment, health and animals? No idea about One Health Approach, sounds new to us. Whatever you said in the beginning, it's true and debatable but right now it's not considered under any agenda.

Do you think the Labor, Livestock and Environment Department could play a role in introducing the "One Health" concept in the Brick Kiln Industry? Maybe [but] right now I have no idea how this could happen.

Do you have any suggestions for such One-Health Approach initiatives? No.

04 Director General, LIVESTOCK Department, Gov't. of Punjab

According to the Prevention of Cruelty to Animals Act (1980) the Act seems to be only for domestic animals. Working animals, especially equids and equines, are not included in the definition.

Not only domestic, but all animals are included in the law. The working animal at the kiln is also covered under this law.

Section 63A. Penalty for overloading animals: Are the working animals at the brick kilns included in this? If so, is there any practice of visiting brick kilns and imposing fines or building capacity of equine owners?.

Yes, it also applies to the brick kiln sector. First we arrange regular awareness sessions and then we also conduct inspections to ensure they listen and comply. If they don't and are using an injured animal, overloading an animal or keeping their animal hungry, there is a penalty system of Rs. 50 to 5,000 in case of violence and 3-5

months in prison or both. The fine is very low: we have sent recommendations to increase the charges for better compliance.

How is this [animal related search] measured and inspected at the kiln or those are not included? Does the search warrant apply to brick kilns also, or is it covered under the Labour inspection system?

We don't need search warrants, as a Government Department we are allowed to visit any worksite where an animal is used. We have our own inspection and penalization system as mentioned previously. This is not as comprehensive as L&HRD but it has its own importance in keeping animals healthy and safe.

Have you ever conducted any training or capacity building of working animals' owners?

We have our own capacity building and awareness programs for farmers, kiln workers and hawkers and transport animal owners. We inform them about animal welfare and in case of violence [there is a]penalty system. We have a MoU with Brooke to conduct mutual awareness sessions. We are also available on demand with our mobile units at any kiln or work site for awareness, treatment or inspection visits. We have also trained Brooke Pakistan's staff on animal care and other issues at the kilns.

Power to make Rules: Has the Livestock Department ever received any request to make such changes in the rules for Brick Kiln working animals?

We have a very good relationship with Brooke Pakistan. They have conducted a very nice session on animal cruelty in Lahore where they invited all stakeholders for a good discussions, suggestions and recommendations for working animal.

Our Secretary notified special instructions after this session for the provision of medicines for animal owners at the kilns and the provision of mobile dispensary units on their (Brooke and animal owners') demand.

Do you think the zoonotic diseases⁶⁷ (e.g. rabies) affect human health too? How and which diseases? (e.g. anti-tick and deworming, vaccination against Hemorrhagic Septicemia, formulation of vaccination policy, post-vaccination titration schedule and animal disease surveillance)

Yes, the Zoonotic diseases affect both humans and animals. We have seen various farmers affected with these diseases due to their animals' health. When I was posted in "Jallo (a park in Lahore)" a farmer, who was the brother of one of our veterinary staff, was affected with a zoonotic disease. I myself was once affected with Rabies and got vaccinated. It happens quite often, once an old farmer who was affected with swollen joints was diagnosed with "Brucellosis" disease.

Does your Department have any responsibility to prevent those diseases? If so, what does your Department do? Yes, we do awareness sessions with Brooke and other CSOs (such as LEF) are doing [a lot] to create awareness about animal health and potential illness and diseases. We also conduct sessions on awareness and symptoms of zoonotic diseases i.e. scabies, etc. from dogs, cats, etc.

Do any of the preventive measures listed on your website apply to animals working in brick kilns? Do you have health or welfare service for animals at kilns? Yes, there is an annual visit at each kiln to examine the animals and get them certified and give them medicines.

There is no hard or written Certificate provided to animal workers but we do have records of each inspected animal at The Department level. For [the owners'] satisfaction and identification, we mark the animal on the forehead with an inspection sign with spray which prevents the need for multiple inspections and the waste of their time.

⁶⁷ More than 75% of all new human infectious diseases come from animals.

Do the animal owners have access to veterinary medicine?

Yes, we provide medicines during our campaigns, they can also visit our hospitals for required medicine, our mobile dispensaries also visit the kiln occasionally and on demand to provide them medicines.

The mobile dispensary visits the kiln as per their informed schedule; these visits can also be arranged on demand by the animal owners or Brooke's request.

Does your Department include brick-kiln animals in reporting and other actions in case of a zoonotic disease outbreak, whether originating in wild animals, farm animals or brick kilns?

We do have our internal reporting system, but no joint reporting with any other Department.

Has your Department ever made any collaborative efforts for human and animal health related issues, workplace safety for human and animal or overall environment impact on human and animal?

Yes, we have conducted a combined session with the Environment Department on "Tree plantation campaign" and there was another session on "One health approach" arranged by Brooke Pakistan.

Is your Department aware of and/or involved in any way in what is called a One Health Approach to human, animal and environmental health?

Yes, we are quite aware and in favour of this concept. The session on "One Health" arranged by Brooke [included] all major stakeholders and I think they all agreed on the concept and were willing to participate. As per my understanding, this is the need of the time, where we (all Departments) should work in collaboration to save our resources for better results. There is a strong possibility of the success of this concept: everyone has similar beneficiaries and similar environment geographically to do their work. Resources can be combined. It would be very effective.

If a One-Health Approach is established what would be your opinion and suggestions for making it effective?

Since our work is field oriented, the Health Department is also working in the field and the farmers and animal owners are also in the field. Coordination and understanding meetings should be arranged. Stakeholders should be collected together and multiple messages can be disseminated.

We conduct monthly meetings; we should invite these Departments to these meetings for a joint effort while the other departments can also be reciprocal.

We have various schemes for farmers and the kiln sector, as do the Health and Labour Departments. If these schemes, materials and resources are parked under one roof, it will be more beneficial, effective and visible. We conduct farmers' meetings in the field, and the Health and Labour Department also do similar activities, which can be combined for better results.

How should this coordination be staffed and organised? (Environment, staff, presence, services)

The activities should be close to the field, near the farmer. Professional staff should be deployed. We do have a *Kisan Baithk* (Farmers Sitting and Gathering) program to discuss their issues, conduct awareness programs, provide treatment, etc. We can have similar programs for a "One Health" concept. We have staff, mobile units, medicines, material, etc. We only have to issue a notification and direction to make a standard. We will be happy doing this, it will be helpful and visible for our work.

05. Director, Labour Education Foundation (LEF), Brooke Partner in Lahore & Shahdara

How long has your organisation been working in the Brick Kiln Sector? Since 1998

What are the key issues addressed by your organisation in the Brick Kiln Sector? Is health one of them? Do you consider animal health? Environmental issues? What type of support, if any, does your organisation

provide to brick kiln workers? Issues addressed: wages, freedom of association, health and safety, bonded labour, gender equality. We offer: capacity building, legal support, organising, campaigns and advocacy. Animal health has been added recently in our programme with brick kiln workers.

If you provide any support to animal health or welfare, what is that support and what is its impact? We provide training to animal owners and their women family members on the health and safety of workers and animals. We also connect them with the Livestock Department.

How would you explain this experience of addressing these issues and/or providing support?

Behaviour of workers towards their health, their family and children’s health: Workers do not earn enough to spend on their health and their family and children’s health. Issue of Peshgi (advance) and non-implementation of minimum wages are the biggest hurdles in low earnings.

What are the prevalent beliefs and practices

The owners’ practice and belief is that *Peshgi* is a right thing to do, they think it is their right and is not illegal. That is why they should be made aware of the laws which clearly declare Peshgi illegal and ask for payment of minimum wages according to law. The workers also believe that they cannot escape from this system of Peshgi so they lose hope and do not try to think of alternatives.

What are the usual practices and Behaviour towards animal health: for example, what do they do in case of injury or illness, etc.

Workers try to use old practices for treatment of animal health. They do not go to doctors for this. Also it is difficult for them to afford taking their animals to doctors. They continue using animals even if animals are sick or injured.

Do the kiln owners play any role with respect to human and animal health?

The kiln owners only care about their profits. They think that the animals’ or workers’ health is the responsibility of workers only.

In terms of possible perceived links between human, animal and environmental factors, do you consider that these issues might affect each other? If so, can you give some examples?

These all are linked closely with each other. Environment has an impact on the health of workers and animals both and also on the larger community close to the kilns. If workers’ rights are not protected, their animals are going to suffer because they cannot afford better treatment for their animals. Also awareness among workers should be imparted on all three aspects.

Focus Group Discussion (FGDs)

Animal Owners

Family-level health practices:

1. **Can you describe your state of mind when you are working at a kiln site? What is your mood like after a day of work? Extremely tired, frustrated?**
 - Due to hard work, bad weather and dusty environment we don't feel good, we don't like the dust on the face and all over the body but what to do, this is our fate and we have to live with it.
 - Dealing with animal is frustrating but its our family business, we don't know any other work
 - We have to spent a big chunk of our money for animal welfare and food.

2. **Family-level health practices related to sanitation, hygiene, and food safety**
 - Do have practice of handwash before meals but don't have enough information about the septs of hand washing. Lack of personal hygiene information and food safety.
 - Majority of male workers go outside for defecation but female and children use latrine at home.

3. **In the last year, have you or anyone in your family had any of the health problems listed below?**
 - Stomach problem are quite high in female and children. Mostly said its because of water but some also confess that having animal at home also cause these problems.
 - Muscle pain and fever is quite high in male community due to head and hard work. Male also complaint about respiratory issue, they do don't use mask, but use safa (cloth) to cover mouth from dust.

4. **Have you ever experienced a serious injury or accident at work? Have someone you know experienced either of these? If yes, what was the outcome? e.g. got care and recovered, no care, working despite the injury, forced not work for a period of time.**
 - Falling mule from kiln due to bad terrain, rocky, slippery, steep areas is often. Some time is OK but sometime it hurts the animal with minor and major injuries.
 - Falling of animal at kiln sometime also hurt the owner or rider with minor and major injuries. They hit during work, some time it hit the human, sometime himself. The cart got damaged which need repair.
 -

**One donkey went into other community house for grazing and the owner of that house, killed the donkey
Animal Owner, Bahawalpur**

My mule was fall from the kiln and injured, we took it to the doctor and got treatment. He could not work 2 months.
Animal Owner, Lahore

- Animal also fight with each other to express their natural behaviour, which is quite normal.
- Almost every second animal owner had an incident of Animal Bite (Donkey and Horse). They get this treated themselves at home sometime get injections when the bite is severe. (Tetnus injection)

Animal welfare

5. **How many hours a day does the animal work?**
 - The animal owners work 7-14 hours in a day, depends on bricks production. They get up at 03:00 am and work till 05:00pm with a break fast and lunch break.
 - They get paid Rs. 300 per 1000 brick hauling. Each animal worker haul 4-5K on daily basis.
 - Friday is usually a holiday, but it is optional, if there is workload on kiln, they have to work longer hours.

There is no control on working hours, if animal worker is working 14 hours they animal has to work 14 hours as well. If L&HRD control the working hours under any law, they working hours can all be controlled for animal, which will be good relief.

Dr. Aman, Brooke-Pakistan, Tarnol

Due to gap in law, none of the animal woerk is covered in Social Security, none of them have applied to "Health Card", none of them seeking te Rs. 2000 relief from PM's initiative. The reasons could be no CNIC and no awareness about how to get enrolled in these programs.

Dr. Aman, Brooke-Pakistan, Tarnol

- 09 hours, 1000-1200 per day, monlty 15-20K, less off days, rainy days, and other sick days.

6. Who does the cleaning and care of animal at home? Any impact of these servies to your or your famly's health?

- At home our female do all cleaning and feeding but at work no body do that.
- Male wash the animal on weekends, while the female food and cleaning of space female members responsibility. Family members do have stomach problem but don't have any ideae about why this happened.

7. How often have you had to replace your working animal due to illness?

- There are many reasons including
 - We replace animal to have more energetic animal for better work, replace lazy animal, injured animal or replace the breed from donkey to hourse.
 - Cannot afford humidity and heat (there are many variety of animal some work in heat some doesnot, but it only reavealed in the weather). **We give less work, better food and water for his health, it was informed by Brooke staff in a session with demonstration, they also infomed to establish linkages with concerned doctors.**

I had a mule, who start biting. He bite my brother in law. Isolded the mule in 75000 I even informed that he is biting, but he bought and mule bited other animals and hhuman.

Got injection from doctor.

8. Does your animal have adequate access to food/forage, access to vaccinations, access to vet services.

- Food is no problem here, we do have grazing area here, also buy food from nearest market. Sufficient food availbe if have money (grazing at kiln and foder Rs. 250/day).
- Enough doctors and par-vet for vaccination (Chandni), itching vaccination by private doctors.
- Brooke also provide basic trainigns on care, first aid of animal, washing, feeding, minor injuries, etc.

9. Is there any government vet service available?

- Only once a year on D-vorning campaign is organized by Livestock and Dairy development department in Lahore. The Brooke office in Bahwalpur is located inside livestock department but the relation with both deparment is only ends up on a coup of tea. No proper animal checking, vaccination is done by livestock department in Bahwalpur or Rawalpindi.
- Different for working and domestic animal to control scheduled reportable diseases (Randor Paste, PPR, Foot and Mouth Disease, Tetnus for animal).
- The animal owners in Bahawalpur never went to the hospital. If there is a need, they do it themselves or BP provide information about wounds healing, care, dehydration, cleaning, welfare.

10. Where does your animals care after work? At home or out of home?

- Most of the animal stays at home to security, care theft and wild animals. Animal safety, if they left alone outside they run on the road and get accident

once a horse was running behind other house and hit a car and horse was died, car was totally crased and 19 human were injured with broken bones.

Animal Owner ,Bahawalpur

- Female looks after the animal as she cannot go outside for feeding, cleaning and care.

11. Did you get any training regarding your animal’s welfare, care and health? Who, When, What?

- BP provide training once a month on grooming and foot cleaning, balance diet, wound managemtn, harness maintenance, fairrery and related issues and animal welfare.

Economics of animal ownership and care

12. Do you think your animal’s working conditions impact your productivity and work? How? Do you think the health of your animal affects your income? How?

- Yes ofcourse, when the animal is fit, we all are fit, if he is down, we are all down.
- If an animal is weak and less productive he eats less, which keep him more weak. If we don’t care about this tiredness, he will be more week. We have been informed about different conditions of the animal e.g. if he is rolligon the floor he has stomach problem, if standing alon he is not feeling well.

Once my hourse wad died (worth 150K) I was ill, had fever, also for a week because of this loss.

Animal worker at Rawat Kiln

13. Where do you spend your income (approximate percentages)

1. Food	2. Infant care	3. Education	4. Health	5. Animal Care
60%	7.5%	15%	7.5%	10%(+)
25%	10%	10%	5%	50%

(+) With green fodder facility

14. What do you say about the shift of animal hauling to auto hauling (rickshaw)

- It varies from kiln to kiln and region to region. But majority of animal workers are not happy with auto rikshow, reasons including:
 - Height at kiln cannot be managed by auto rikshaw is not possible.
 - The feed is available 50% free and 50% on cost. For Auto, we have get it filled with fuel which is very expensive.
 - The auto cannot be survived in kiln environment (with high corrosion due to dust) which is a loss.
 - Different kiln used different hauling system, some time hauling with animal is more dangerous, if they fight, they lost the bricks. The auto is in the owner control. But at the same time, the height of kiln does not allow to use auto.
 - The cost of auto is 2-3 lacs while the cost of anial is 50-150K.
 - The animal is always appreciating (with production and health) but the auto is always depreciating. If an animal is injured we get him treatment and he is Ok but if a rikshaw ia fallen from the mountain it cost an animal to get repaired.
 - If we have an option for Rikshaw and Animal, we will go for animal (75%) due to fuel and cost of maintenance.
 - Due to family business, we are allign and in sort of love with animal.

Environment

15. How does brick kiln environment (heat, dust, smoke, winter) effect HUMAN health (try to get detailed answers)

- 10 out of 90% workers (both kiln and animal workers) have respiratory issues, (saans ruk ruk kar aata hay), eyes get red due to dust, kidney infection due to dust and water, Immune system get week, muscle issues and fever due to extreme weather.

16. How does brick kiln environment (heat, dust, winter) effect ANIMAL health

- Muscle pains (it is visible when he is walking).

Once my animal it took 3 months he did not work only stayed home. We spend around Rs. 16,000 on his treatment and loss of 78 days (x 1500 =117,000).

Animal Owner, Lahore

17. What are the potential health threats to your animals at this kiln environment? (Multiple choice options included a lack of vaccinations, limited accessibility to veterinary care, limited knowledge or training on how to handle animals, poor housing of animals, and others.)

- No vaccination issue in Lahore
- No vaccination facility in Bahawalpur and Rawalpindi

I was inured once during my work and I did nto wrap the wound and kept working with animal and due to animal waste and urine my wound get worst. I visited to the doctor and get tetnus which heald the process.

The smell of animal waste affect the breathing system of the family.

It also increase the maskitos and flies, which more effect the family female and childrens.

We also get malaria due to these waste of animals.

The fly around the waste and urine also cause Diaria, especially to kids.

Shaukat, Manga Mandi

Animal Skinache/Dermatitis can also affect human, there is no evident but there is chances.

Animal respiratoy issues affect animal to animal, if one anial is having nasal issue, next day many of them seen with same problem.

Amjad Ali, Manga Mandi

One Health awareness, beliefs, and knowledge

18. In your opinion, what measures can be taken to lower the risk of work-related injuries to animals? risks to people in their work with animals?

- They should be kept in separate places to avoid fighting. There must be a space where these animals can go and experse their behaviour.
- People don't have awreness about such issues, but more proper training can be useful to reduce ther incidents, accidents and provide better care to their animal health and personal health. Eg.

19. Do you think their illnesses also affect you, your family (especially children), if yes, any evidence? "Do you believe that humans can get diseases from animals, plants, and/or environment?"

- Yes, ofcourse, no wages, no food, it effects all family.
- We have cash advanced system here
- Itching may affect human.

Approx. 05 month
Doney infected with itching dermatis.

2 owners were infected too..

Washed with detol.

Donkey was also treated (thru BP) with medicines and get removed

Yes, some time directly, sometime indirectly.

The smell of animal waste affect the breathing system of the family.
It also increase the maskitos and flies, which more effect the family female and childrens.
We also get malaria due to these waste of animals.
The fly around the waste and urine also cause Diaria, especially to kids.

Shaukat, Manga Mandi

20. Prevalence of risk factors affecting One Health issues

- A polio vaccination team was visitng kiln for children vaccination but there is no such facilty for animal vaccination and health.
- When human get injured he is taken to the doctor and get vaccination (tetnus) and treatment, medicines but whe an animal get hurt or injured he is forced to get the work done in similar injured postions.
- Due to long working hours, human work 12-14 hours so as the animal has to work similar hours. During free time human get rest in the sheds and under fans but the animal is resting under the sun in hot weather.
- During work when human is thirsty or hungry they feed themselves but animl have to wait for his owner to feed when he feels free.
- Human get tetnus vaccinated when injured (minor or major) but animal wounds only get washed with water. Only serious and major injuries are teakent to the doctor.
- Only 1122 provided training on emergency.

21. Animal bites to people (narrate if any incident of biting by horse, donkey, mule, snake, mongoose, jackal, rats)

- Mule and Horse often bite when they are over fed, they are fighting, handled with less care, when tired, angry, (special training on special animal behaviours wheil eating, sleeping, resting, mating, enjoying, etc.).
- Rats also bite at home, (once a rate bite a worker he had14 injection).
- Dogs also bite when “Rabis”, when needs vaccination (14) for human.

22. Did you ever heard of rabies cases in your community

We heard about dogs.

Its around 25 years, one of my relative bought a donkey, who had rabies and start biting everyone, he was wild and the only solution was to shot him dead due to safety of other animal and humans.

Amjad Ali, Manga Mandi

- Dog sometime bite the donkey.

Approx 11 years ago a dog bite my donkey. We tried all possible treatments but no luck and the dog and dokey both were killed.

23. Is there anything you’d like to add that we haven’t talked about?

- There are few animal have limping and lameness, its been years its not going, please provid solution.

Observations

- No OSH or animal accident prevention trainings for animal workers.
- Animal workers attend a training on animal health, husbandary, hauling and others by BP field mobilisers.

- There is a trend of changing animal with loading vehicles due to cost effectiveness. If an animal is sick it takes times to heal and join the work but if a machine has problem it can be fixed in an hour. There are dozens of mechanics available near kiln sites but there is hardly an animal doctor around/
- The kiln owner prefer to have machines than animal, as they are more reliable and have less day off than animal workers but animal workers have their own philosophy (as said above) for keeping animal at kiln.

FGDs - Female Family Members of Animal Workers

1. How long does your family stay at this kiln or near this kiln? (intervals in a year)

- There is a variation from 3-45 years of these families working at kiln and dealing with working animals. Some of them have their third generation in same working animal business. Unfortunately, the situation of living and livelihood is same as their elders, same health, same living conditions and same debt of kiln owners.

2. Have you or your family members experienced any health issues from working here? What are these issues (you, your spouse and children, your parents)? For example, have you noticed any differences in your own or your family's respiratory health since you have worked at the brick kiln?

My son Sarwar appendix was burst, could not be diagnosed by the local doctors. He was under treatment at Jinnah Hospital and remained sick for a year. We spent approx. 6-7 million, which we took from the kiln owner as over draft/loan, we have hardly returned a quarter of this there is still millions to return. My son did not work 3 months after his operation, which also multiplied the debt.

(Kausar, Mother Sarwar, Manga Mandi)

- The female community members also go through the tough conditions like their male members e.g. hot weather, dust and animal waste. The male community do have interaction with male but when they are resting and eating they are quite away from the animals but female members and children live in small houses with domestic and working animals.
- According to the female members (mothers, sister, grandmothers) and local doctor (Dr. Ayesha, BHU, Bahawalpur) cough, fever, eye infections, vomiting, motion, skin infections, stomach, respiratory and burning complaints are quite often in these communities. Male members usually complain about cough, muscle pains, skin infections, burning and minor injuries while the female members and children are suffering with vomiting, motion and stomach issues.
- She (Dr. Ayesha) also explained that majority of their health issues are due to unhygienic conditions and bad living conditions. Since she never had an examination in connection to dealing with animals, but during discussions they completely agreed that this is one of the invisible reasons of all these issues with females and children.

My granddaughter is almost a year old. She has continuous vomiting and motion since her birth, doctor only gives syrup and medicines but no progress.

(Kausar, Mother Sarwar, Manga Mandi)

3. Do you face any frustration and anger from your husband or other male family members due to hard work at kilns?

- Female members do face their male members' anger and frustration (GBV) due to various reasons:
 - When they are unable to earn as they planned due to rainy season. They still have to feed animal and family members either way or no.
 - Due to no work in Moon-Soon, have to rely on kiln owners' debt.
 - When their animal is not responding or a lazy animal
 - Due to the heat and hot working conditions at kiln.

When the male members are angry and frustrated they are angry on us, which makes us frustrated as well, and we start beating our children.

(Nasreen, Brick Kiln at Rawat)

- Since their only earning instrument is the working animals and when they get sick they earn less but their expenses are doubled. They need treatment, more food and remain idle for many days, which has multiple impacts, e.g. we, the whole family, eat less, less food for animal and major portion of the earning spent on their treatments. Which cannot be compromised.

4. In the past year have you or anyone in your family had any of the health problems listed (below), and if so for how long?
- Male members usually complaint about respiratory issues, Stomach problem, fever, headache, diarrhoea and muscle pain is quite often.
 - Female members and children facing stomach problem and diarrhoea which they think is mainly due to un-safe drinking water and pollution.
 - ***When further probed about how they manage the children and animal at the same time? Although they said we wash our hands while switching from animal to our children but they totally unaware that its just not hand who carry jermes but their cloths, hairs, shoes, shawls and other accessories. Also they are unware that when animals waste and urine get dried, due to boundary walls, it remained in the premises and ultimately become part of their food and drinks.***

The house/families who don't have animal are more clean and health than us because we our time is divided in our children and animals care, while they give all their time to their children in their nurturing, cleaning, feeding, etc.

We live close to the animals, sometime when our children playing in the courtyard toys (balls, etc.) went to animls area which is usually full of shit and urine. Children don't understand the danger of this shit and urine and start playing with the toys again and get their hand, cloth, linen dirty and leave germs on that, which ultimately affect their health and sometime ours too.

(Nasreen, Brick Kiln, Rawat)

1. How do people usually treat those illnesses?

- There are BHUs near each kiln in the surrounding of 1-3 kilometer with a doctor (), lady doctor (in Bahawalpur) with a dispenser for general treatment. If the case is severe they refer to the general hospitals i.e. (Jinnah in Lahore and Victoria in Bahawalpur)
- For the kids they also consult private physicians and local dispensaries,

Animal Health and Welfare

1. Do you have animals (donkeys)? How important is the animal to your family?

- Working animals are as importance as their children, they are the source of income. These animals are also use as means of transportation for family members when needed.

2. Who feeds and gives water to equids? What food is given to the animal? Who prepares the food?

- Feeding and caring of animal is everyone's responsibility (male, female, children) based on the availability and time. Make look after the animal when they are at work and female and children look after the animals when they are home. Collecting grass, , feeding, cleaning, watering is the key task to be done by the female members when animal is at home. Male prepare the fodder and look after the health e.g. if there is a scars or wound they clean them with water and wrap them.

3. Does your donkey have 'horseshoes'? Do you see having "shoes" as part of the donkey's health?

- Replacement and repair of horseshoe is Males responsibility, female are not aware of this, neither do this at home.

4. How can you tell whether the animal is sick or injured? (e.g. behaviour, symptoms, hobbling, sores under the saddle, others).

- Female also have a fair understanding about a healthy and sick animals. When an animal is not or less eating, not resting or not drinking or shivering specific part of the body, it's a sign and indicator of illness. According to females, its like our children, if we get the idea about the kids health with their movement we have the same feeling for our animals.

5. **What do you do if you notice any signs of sickness or injury? If the equid is sick or injured, who looks after it? How do you decide if medicine or treatment is required? Who makes that decision? If medicine or treatment is required, who brings the medicines or arranges treatment?**
- For minor illness we change the feed according to sickness (Gur (sweet from sugarcane) mix with grains), wash the wounds, etc. In case of serious injuries male take them to the doctor or call the doctor at home for treatment.
 - Male members usually decided about the medicines and selectin of physicians based on their cost, availability of time and priority of treatment.
6. **What type of diseases, illnesses or injuries do the animals usually get? (please name them)**
- Wounds are frequently visible due to load and harness. Sometime serious fractures and bone damage due to accident or “Colic” (abdominal pain).
7. **Do these injuries affect or impact your or your children’s lives? What is the impact?**
- The female community members are not aware of any impact of animals sickness, injuries and impact of other on their family members.
 - ***They do complaint the stomach problem, diarrhoea and vomiting but could not relate it to their un-hygienic practices. They look after the animals and children simultaneous but unable to link it. As said earlier, they animal waste, urine and blood stains remain in the house for a longer period of time and since these transmission is not visible, its not noticeable.***

Economics of animal ownership and care

8. **Have you/your family ever replaced your working animal due to illness or death? Why, when?**
- There is a majority of families who replaced their animals (1-5 in life) due to various reasons including Colic (abdominal pain) which is due to bad feed and accidents
 - ***Female training is very important as they give the first and last meal to the animals at home and both are important, if female members are trained in feed making and feeding (quantity) would be useful. A personal hygiene training (by Brooke, Environmental Hygiene department, livestock department or health department, etc.) would also be useful to avoid indirect of animal’s care on personal (female and children’s) health.***
9. **How did this purchase affect your living conditions or your livelihood? (health, food, living, education, etc.)**
- Each new purchase of animal is a big cut on living mainly on food. The majority of the animal owners who replaced or purchased new animal are still under debt of kiln owner which empower the bonded labour conditions at a kiln. To pay the debt, they sometime push their females and children in brick making process. This debt also restricts their thinking of finding any other livelihood option or moving to other places for better opportunities to have better live.
 - ***In a nutshell, each animal replacement (due to sickness or death)***
 - ***Reduce quality food options in such families***
 - ***Effect children education if they are in school***
 - ***Increase female and child labour in brick kiln industry***
 - ***Increase bonded labour condition for the family***
 - ***Promote bonded labour culture in brick kiln sector.***
10. **Do you think your animal’s health affects your own overall living/income/health conditions?**
- If an animal is sick or not working, there is no earning, if there is no earning no food, no cloth, no entertainment. Less food affect the both animal and human health.

Yes, it does a lot, (said a pregnant lady in Bahawalpur), everything is linked with money. If an animal is sick or died it affect everything. The first cut will be on the food and I (pregnant lady) need more food than others. I will be unable to produce healthy baby, and unable to breast feed due to weakness.

(Bahalwapur)

11. Do you get any work support (welfare, training implements, etc.)? Did you get any training regarding your animal welfare, care and health?

- Brooke do provide training to male animals owners but no training is provided to any female members. Even the kiln owner does not provide any help or support to handle and care the animals.
- According to Brooke they provide basic information (50% agreed that they received such trainings).

12. If a centre at the kiln sites is established where workers and animals can be treated under one roof, will you or other animal owners (equids, equine) visit that centre? If not, why? What resources and services should be available for humans and animals in this centre

- There must a professional staff to provide trainings. They should tell us about types and categories of fodders, making fodders, timing of feed/water.
- The center should have pictures of fodders, animals, their diseases, etc.
- Videos about animal care and welfare, symptoms and signs of sickness.
- Doctor for mother child care and preventions should also be available for animal and human medicines, first aid and general medicines.

13. Is there anything you'd like to say that we haven't talked about?

- Nothing (lack of exposure)
- Brooke (Dr. Zahid) collected data to provide support to needy families, but till yet, nothing has happened.

Observation

- No idea about husbandry training
- No female is aware about such training
- No training on personal health and hygiene
- Quite willing to adopt new trends and technology.
- Social media can be used for awareness raising at community level
- Peer education (few female and male can read and write URDU messages), video can make better impact.
- Children received hand washing training in school and they also informed their parents about this. But female members are not aware about their personal hygiene.

FIELD SURVEY RESULTS/TABLES

Section 1: Survey of Male Animal Owners

XL Sheet Attached

Section 2: Survey of Female Family Members of Animal Owners

XL Sheet Attached

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