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Research Review 2022

Highlights from Brooke's
Global Research Programme

Contents

- [3](#) Welcome to Brooke's 2022 Research Review
- [4](#) Positive impacts for horses and people: trialling locally made, low-cost bits in Senegal
- [5](#) Service-seeking behaviour of equine owners in Pakistan: challenges and opportunities for change
- [6](#) Donkeys' important contribution to Kenya's dairy sector
- [8](#) Using human behaviour change science to understand why people whip donkeys in Kenya
- [9](#) Q&A with Paul Mngat, Brooke Ethiopia's MEAL and Research Officer
- [10](#) One Health: calling for investment in animal health to prevent another pandemic
- [12](#) Working equids and disaster risk management in Nicaragua and their welfare status: invaluable support to resilience and recovery
- [14](#) Brief update: Tackling epizootic lymphangitis
- [15](#) Brief update: The burden of animal diseases in working equids - PhD update
- [15](#) Brief update- Brooke's new research strategy
- [16](#) Brooke's Global Research team

Welcome to Brooke's 2022 Research Review

High-quality, ethical research is core to Brooke's evidence-based approach, which we use to create the case for lasting change. Evidence underpins all we do to achieve better working equid welfare. It informs our decision-making, and learning and adaptive management, provides accountability to beneficiaries and supports our advocacy work and supporter engagement. We generate evidence for greater impact based on research that includes community engagement and working alongside other international non-governmental organisations and universities. Our expertise in equid welfare contributes to sustainable global development, which helps to generate deep and sustained changes regarding their inclusion in priority issues for society.

This has been a year of reflection for our Global Research Programme. We have taken some time to re-focus and develop an approach that allows us to channel our resources to where they have the most value in generating ethical research that responds to [Brooke's 2025 Global Strategy: A Life Worth Living](#). The result is an ambitious research strategy developed through consultations with internal and external stakeholders; this is introduced on page 15 and will be launched this year.

Brooke Latin America and the Caribbean (BLAC), within the framework of Brooke's Global Strategy 2025, has embarked on a journey to develop collaborative research with the Tropical Agricultural Research and Higher Education Centre ([CATIE](#)) (see page 12). The collaboration has generated evidence on the contribution of working equids to the resilience of animal-owning communities most exposed to the effects of natural disasters in Nicaragua. The findings of this study will strengthen and guide Brooke's advocacy efforts on the inclusion of working animals, and consideration of their welfare in all stages of disaster risk management in the region. The strategic focus of these efforts will be on actions to position this issue in national, regional and international agendas for the effective integration of working equids in territorial development dynamics and in prevention, response and rehabilitation schemes during emergencies and disasters. As far as we know, this study is the first of its nature in the Latin American and Caribbean region.

We have continued to address the need for evidence to support our Donkey Skin Trade campaign. An important research project led by our team in Kenya, in collaboration with the [Kenya Agricultural and Livestock Research Organisation](#) (page 6), highlights the important role that donkeys play in the milk value chain and, therefore, their socio-economic contribution to communities. The findings are being used in advocacy to protect donkeys from the donkey skin trade, including reinstating the ban on slaughter that was repealed in Kenya.

A new vision of our Global Research Programme will allow our international teams to focus our ongoing efforts on the processes of generating evidence. With strategic, social and community value, our new research strategy will be key to configuring our research needs at the micro and macro level and nurturing our concepts, methods and theories to guarantee that information is delivered to the right stakeholders to assist them in their role as agents in improving working equid welfare and the communities who rely on them.

Fredred Valdivia

Regional Director, Brooke for Latin America and the Caribbean



Positive impacts for horses and people: Trialling locally made, low-cost bits in Senegal

The population of working equids in Senegal is estimated to be 539,309 horses and 458,693 donkeys. These animals undertake commercial work, including transporting goods and local people by cart in urban and peri-urban locations, and domestic work, such as water transportation in rural areas.

Most of the bits used for working horses in Senegal are made of construction iron, recovered from the rubble of destroyed houses or near construction sites. The poor design, shape, fit and quality of these bits can lead to mouth injuries, which can harm horse welfare by causing discomfort, pain, distress and difficulty eating. Brooke West Africa piloted a project to manufacture and trial improved bits for cart horses working in transporting people and goods to address this problem.

Brooke West Africa worked with local artisans to develop an easily replicable bit prototype that horse owners and cart drivers would accept. It aimed to reduce discomfort and injury compared to pre-existing bits being used for cart horses. This was an iterative process informed by literature, manufacturers and retailers, where technical specifications on the material, mouth-piece, and cheek-pieces were discussed with artisans. Prototypes were produced and refined based on expert feedback from the Brooke team. It was important to first test the initial designs on a small sample of 30 horses to ensure that there would not be any unintentional, adverse impacts on their welfare. Once the team was confident in a suitable prototype, the full-scale pilot took place.

A total of 540 driver and horse combinations took part in the study. Eight animal-based welfare indicators were designed to monitor for positive or negative effects of

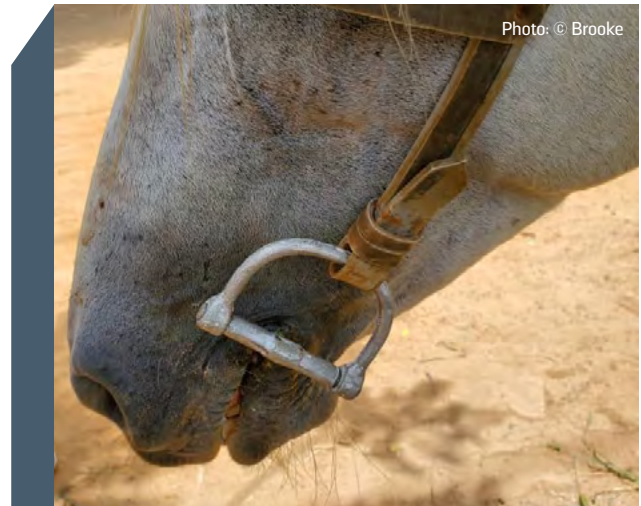


Photo: © Brooke

New bit prototype

the new bits. Physical indicators included wounds or bruising on the horses' lips, tongue, buccal mucosa, and bars. The horses were also observed for behavioural signs potentially signalling discomfort associated with the bits, including holding the mouth open, protruding the tongue out of the mouth, shaking, tossing, tilting or turning the head whilst in motion. Welfare indicators were observed when new bits were introduced and again after 21 weeks of daily use. The results indicated statistically-significant improvements in all welfare indicators measured. None of the drivers reported any difficulty with horse control nor chose to revert to their original bits.

Following the pilot, all those who took part adopted the new bits. Brooke West Africa subsequently organised a workshop to train a further four artisans to produce the new bits. Feedback has shown that the bits have been adopted by more horse owners and are a welcome source of additional income for the artisans. Brooke West Africa has organised a second workshop for 2023 so that more artisans can be trained in producing the improved bits, making them available to more horse owners throughout Senegal.

This project demonstrated the feasibility of producing an alternative bit design for cart horses that improves welfare issues, is low-cost and is crafted from locally-available materials. The improved bit designs can positively impact many working horses in Senegal and beyond whilst also representing a potential livelihood or income diversification opportunity for the local artisans who manufacture them and the vendors who sell them.

Seck, M., Jobling, R., & Brown, A. F. (2022). Trialling Locally Made, Low-Cost Bits to Improve Bit-Related Welfare Problems in Cart Horses: Findings from a Study in Senegal. *Animals*, 13(1), 2. Available from: <https://www.mdpi.com/2076-2615/13/1/2>

Brooke's Animal Welfare Indicators Repository is a publicly available resource that provides expert advice and a range of animal-based welfare indicators that can be implemented by those wishing to measure equine welfare or adapted by those wishing to assess the welfare of other species. It can be accessed at [here](#).

Service-seeking behaviour of equine owners in Pakistan:

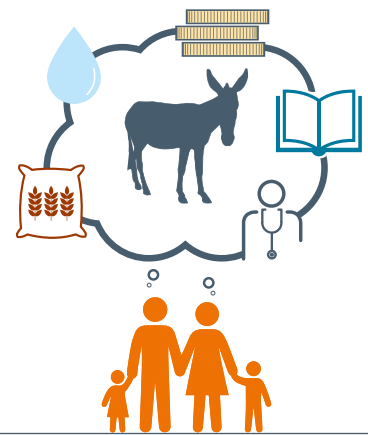
Challenges and opportunities for change

Brooke Pakistan works with animal health practitioners (AHPs) to strengthen the structure and quality of animal health provision. Despite having success in improving the quality of care between 2017 and 2019, there was no increase in service uptake during the same period. The number of users stayed lower than anticipated and suggested a need to better understand the challenges and barriers associated with using services provided by recommended animal health practitioners. Brooke Pakistan interviewed 231 animal owners who used the recommended services, 434 who used alternative services (such as traditional healers) or treated their animals themselves and 49 animal health practitioners to find out more.

Key findings:

1. Animals' role and the role of family in decision making

The findings suggested that owners who more readily recognised the role of equids within their own family's food security were more likely to use animal health practitioners and prioritise animal health as a household cost. Additionally, the role of family, particularly women, in decision-making was relevant to whether an animal health practitioner was called.



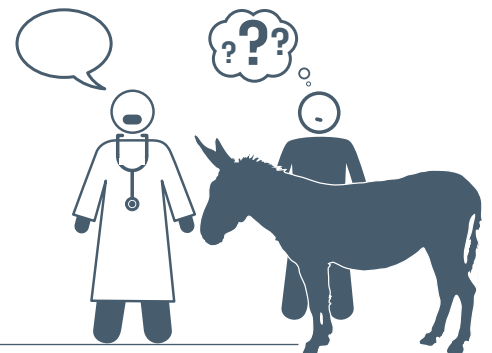
2. Cost, accessibility and social acceptance of different animal health care



The cost of treatment was a limiting factor, compounded by the loss of income when an animal is sick and cannot work or income is spent on an animal that does not recover and needs to be replaced. The cost of recommended services is much higher than that of self-treatment or traditional healers, making these more attractive or, at times, the only possible option. All participants expressed a need for their equids to recover quickly, largely because the sickness of an animal caused a loss of income and financial tension. Hence, there was always a desire for AHPs to attend swiftly, and alternatives, including self-treatment and traditional healers, were sought when they couldn't. A strong social learning aspect was also associated with using traditional treatments and healers. Owners tended to do what they had seen others do or what colleagues told them to do rather than approach a recommended animal health practitioner.

3. Animal health practitioner communication styles and beliefs about their skills

There was a belief that animal health practitioners who focused on non-equid livestock were more skilled than those who focused on equids but that they did not have knowledge of equids and therefore were unable to treat them effectively. Animal health practitioners' ability to build rapport with clients and fully explain diagnosis and rationale for treatment was also important. The lack of satisfaction with recommended animal health practitioners was often described in conjunction with the contrasting experience of visiting a traditional healer who had a good rapport with owners.



RESEARCH INTO USE

The findings identified potential barriers and opportunities for change, which Brooke Pakistan will use in their community development work, their work with animal health practitioners directly and to inform their work with universities to improve veterinary curricula.

Donkeys' important contribution to Kenya's dairy sector

There are over 1.8 million smallholder dairy farms in rural Kenya, estimated to make up about 80% of the national dairy herd, with West Pokot, Bomet and Nyandarua counties among the areas with the highest dairy production in the Kenya Highlands. These counties have a topography of valleys and hills that lead to rough terrains and poor road networks, many of which are impassable using conventional modes of transport, especially in bad weather. Donkeys appear to play an important transport role within these counties' dairy sector, and a study by Brooke East Africa aimed to understand this better.

A descriptive cross-sectional study was conducted using qualitative and quantitative methods, with data collected from dairy farmers, professional milk transporters and dairy cooperatives (collection and processing plants that re-sell milk). A total of 13 key informant interviews were conducted. Eighty-four participants took part in focus group discussions, and 1,236 dairy farmers were surveyed.

Donkeys were described as critical to farmers' dairy enterprises either due to their role in bringing fodder, water, and essential inputs to dairy cows or transporting milk to the point of sale. Seventy per cent of households reported selling their milk to dairy cooperatives. Households also reported selling milk to traders (27%), local consumers (neighbours; 6%), hotels (2%) or institutions (1%). The distance to hotels and institutions was typically less than 1km, so people could carry milk as a head or backload or delivered using bicycles. Donkeys were often used to transport milk to other consumers – particularly to cooperatives – and spent around one hour travelling an average distance of 4km from the farm to their destination.

The 23 professional milk transporters who participated in the study reported transporting 427 litres of milk per day by donkey. This is in comparison to only 180 litres per day transported by motorbike. Where motorbikes were used, people or donkeys often carried milk from inaccessible terrain to a roadside collection point, with motorbikes used for the rest of the journey.

The 11 cooperatives interviewed reported a combined milk collection of 73,750 litres per day. Of this, donkeys delivered 17% (15,000 litres). Assuming a typical price of KES 36 per litre (as reported by the participants), this suggests 5.5 million litres of milk delivered annually by donkeys with an estimated revenue of KES 196 million (approx. GBP 1,278,658).

Participants stated that improved road networks, land consolidation to shorten distances within farms, the ability to lease extra land to graze cattle freely, and access to piped water would reduce reliance on donkeys. However, in addition to their role in the dairy enterprise, farmers also described how donkeys were used to support household activities and bring in additional income, transporting people and goods for a fee, often raising more income than the dairy enterprise. Donkeys were also reported to be relatively affordable to acquire and maintain over motorbikes, providing an option for resource-poor households, although good donkey welfare requires appropriate care and an associated financial commitment. These factors compound the multidimensional role of the donkey within these communities beyond their means to transport milk.

Photos: © Brooke





RESEARCH INTO USE

While Brooke does not endorse advocating for donkeys to work more, we understand that often policy actors are most willing to engage with evidence containing economic arguments that demonstrate the contribution of donkeys within important sectors. Brooke East Africa aims to use this study to develop policy briefs highlighting the important role donkeys play in Kenya's dairy industry. These will be used in local and national advocacy to support asks for donkeys' inclusion in policy and initiatives that will protect their welfare, including in the short-term discouraging their sale into the donkey skin trade and reinstating the ban on donkey slaughter. Brooke East Africa also plans to use the findings to engage with owners and discuss how best to care for and work their donkeys in this sector in a welfare-positive way.

	Inputs transported by donkey Fodder to dairy cows Water to dairy cows	Farming system / Production →	Transportation method to point of sale By donkey By trekking By motorbike
Nyandarua 410 households interviewed. Poor quality roads and parts of the farm inaccessible by motorised transport.	83% 10%	 Typically limited land, 2 cows on a zero-grazing system	32% 27% 36%
Bomet 453 farmers interviewed.	27% 30%	 Typically limited land, 2 cows on a zero-grazing system	5% 54% 42%
West Pokot 373 farmers interviewed. Inaccessible terrain.	1% 4%	 Typically more land, 4 cows on a free-grazing system	61% 14% 28%

Note: Proportion of farmers that reported using donkeys/trekking/motorbikes to transport inputs to the farm and/or to deliver the milk product.

Human Behaviour Change for Life

Using human behaviour change science to understand why people whip donkeys in Kenya

Donkey handlers in Kenya commonly use whips to direct their donkeys and discipline them. Brooke East Africa and partner organisations have attempted to address whipping; however, conventional community engagement approaches have not resulted in satisfactory or sustainable improvements. Although animal health interventions for working donkeys in Kenya have succeeded, reliance on punishment-based handling and training practices has been more difficult to resolve. Brooke East Africa and their partners continue to identify whipping as a behaviour resistant to change.

Human Behaviour Change for Life ([HBCL](#)) and Brooke both recognise the need to understand human behaviour to provide solutions to improve animal welfare. Brooke commissioned HBCL to work with Brooke East Africa to design and undertake a study using human behaviour change science to gain a holistic understanding of whipping that could be used to inform the development of future interventions. A survey of donkey handlers (n=45) was conducted alongside four focus group discussions (n=38) and six semi-structured interviews. The resulting data were thematically analysed.

Whipping was found to be a complex behaviour with a wealth of factors contributing to its durability in Kenyan donkey handlers. The study identified a range of potential interrelated causes of the behaviour, as well as antecedents and maintenance factors. These aspects were extensively explored considering factors such as capability (e.g., skills, knowledge, and decision-making), opportunity (e.g., the environment, available resources, and social context) and motivation (e.g., beliefs self-identity, confidence, and control, how the behaviour is reinforced and emotion). Such complexity demonstrates the systemic nature of human behaviour change and indicates why Brooke East Africa and their partners have found it challenging to address.

Thoroughly understanding a behaviour is the necessary first step in subsequently changing it. The causes, antecedents, maintenance factors and opportunities for change identified in this study have provided Brooke East Africa with the information needed to begin to plan and develop more informed interventions grounded in human behaviour change science.



Paul Mngangat joined Brooke in August 2022. He has over eight years of experience in monitoring, evaluation, accountability, and learning (MEAL) in several national and international charities. Before joining Brooke, he was a MEAL Officer at Children's Mission Africa and worked for Transparency International Kenya, among others.

Paul is motivated by a desire to contribute to solving societal problems through research, and knowledge generation and management, and he focuses on ensuring organisations make evidence-based programming decisions. Having worked in several organisations and thematic programmes, he has a broad cross-sectoral understanding of issues related to social development, including health, governance, peacebuilding, and resilience building.

Paul combines his enthusiasm for travel and experiencing new cultures with a love of sport and spending time with his family.



What are the challenges and opportunities for conducting research in Kenya?

"We live at a time when social science researchers in universities and research centres in Eastern Africa are struggling to have their research seen and used. They are asking some very important and useful questions and are writing papers which ought to have seen daylight but have not.

The Kenyan government has made increased investments in research-related activities in both the agricultural and health sectors. Still, there is heavy reliance on external funding, which has not necessarily led to increasing local research capacity or driving the local research agenda. Many research capacity strengthening challenges stem from a lack of adequate funding for both research capacity strengthening and research infrastructure development. A lack of policy or institutional frameworks to guide knowledge transfer is thus hindering research capacity strengthening for emerging researchers.

Technological advancements have provided a great opportunity for research work in East Africa. It can bring a scholar close to fellow scholars they've never heard of and would never meet but whose writings are relevant and exciting to come across. With the continued adoption of modern technological infrastructure, the future of research is brighter."

What aspect of the research project's life cycle excites you?

"I speak for myself when I say the practical application and consumption of research findings is my favourite. Using the knowledge generated to change the life of communities is my driving force in research work. While I agree that all the other aspects of the research project cycle are equally important, I am most excited seeing a rural woman's life change as a result of a new practice or government action informed by research findings."

What are you most looking forward to in your new role at Brooke?

"Having worked in programmes focusing on health, education, peacebuilding and resilience building in the past, I am excited to join Brooke. I am full of enthusiasm and vigour to venture into and contribute to the working equids discourse. Born and raised in an arid area in Kenya – West Pokot – I was naturally introduced to the donkey as a central part of all work streams at our home, from fetching water, to ferrying goods, and ploughing, and I witnessed how many lives solely relied on the donkey for survival. I now have a unique opportunity to contribute to the promotion of welfare practices, harnessing its potential and protecting donkeys. With the unique opportunity that evidence generation through research gives, I am looking forward to joining this vibrant team driven by my personal experience and life testimony on the special contribution of the donkey."



Photo: © Xaume Olleros / Brooke

One Health: Calling for investment in animal health to prevent another pandemic

One Health, the idea that the health of people, animals and our shared planet is deeply connected, has gained attention since the COVID-19 pandemic as a way to combat threats to global health.

The success of One Health hinges on collaboration between the animal and human health sectors as we face a growing threat from zoonotic diseases and antimicrobial resistance. Underinvestment in animal health systems, which are vital to animal welfare and people's health and well-being, has led to shortages in the workforce, as well as critical shortages in vaccines and medicines, and threatens our ability to prevent and respond to these major threats.

The [Action for Animal Health](#) coalition – which was founded by Brooke – set out to explore the current state of five areas of animal health systems globally and what resources are needed to support the implementation of One Health.



Action for Animal Health

Methods

Data were collected from open sources and 22 semi-structured key informant interviews with multilevel and multisectoral stakeholders, including donors, United Nations agencies and programmes, and international and non-governmental organisations.

Ethiopia and Pakistan were included in case studies because of their low- and middle-income country status, high dependence on animal livelihoods, and as areas of concern for emerging and endemic zoonotic diseases.

Key themes:



1

Strong animal health services are essential to sustainable development

Animal health investment drives sustainable development. People across lower- and middle-income countries live close to animals, which increases their vulnerability to the impacts of poor animal health and welfare. In Ethiopia, 80% of households have contact with domestic animals, and in Pakistan, eight million rural families are engaged in livestock production. Improving the quality of animal health services will contribute to securing global health and livelihoods, as well as food safety and security. Animals with good welfare, including livestock and working equids, can support resilience to the impacts of climate change by helping farmers adapt to changing environmental conditions.



2

Better legislation, regulation, and implementation of services are needed

Significant shortages of skilled animal health practitioners exist, especially in rural areas. Practitioners have varying levels of qualification, including some with none at all. Poor animal health services create distrust and result in a lack of demand. These gaps also increase the risk of transmission of both animal and zoonotic diseases and antimicrobial resistance.

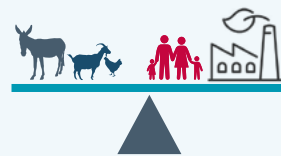
Governments need to establish statutory bodies to effectively regulate veterinary education and the quality of animal health practitioners. Registration of all animal health practitioners will help assess the animal health workforce's size, type, and distribution, and will inform national workforce strategies to fill gaps.



3

Communication and connection are key to One Health

Disease surveillance is vital to prevent outbreaks; systematically collecting and analysing data and disseminating it to those who need to know can inform the action taken. Surveillance requires effective communication between many different stakeholders. However, infrastructure can make this difficult, including low internet connectivity and a lack of digital equipment and platforms to be able to report disease quickly. For instance, paper-based reporting is still normal in Pakistan and Ethiopia, which hampers rapid action. Moreover, gaps in laboratory workforce capacity and the lack of animal health services in rural areas can make effective surveillance difficult.



4

Animal health needs equitable status in One Health approaches

Although One Health has gained significant political traction since the COVID-19 pandemic, there is still a lack of awareness of the public health and sustainable development benefits of good animal health and welfare. This translates into low budget allocation to animal health activities in government-led One Health alliances. One Health frameworks are needed nationally to ensure equitable resource distribution and effective coordination and collaboration.



RESEARCH INTO USE

This review was commissioned to support Action for Animal Health's advocacy. Its recommendations will form the basis of the coalition's core arguments for the duration of its five-year strategy. The review's findings inform the coalition's arguments for why a new World Bank Pandemic Fund should allocate funding to strengthening animal health systems. Current underinvestment could facilitate the emergence of zoonotic diseases that go on to become pandemics.

Governments are currently negotiating the contents of an international legislative instrument to strengthen pandemic prevention, preparedness, and response. The results of this review will be used to convince United Nations member states to include building strong animal health systems as an obligation in this new instrument.

With thanks to Praxis Labs for conducting the research and coalition members and supporters who reviewed the full report. Download the full report [here](#).

Working equids and their welfare status in disaster risk management: Invaluable support to resilience and recovery in Nicaragua



○ Denotes study location



Figures show that 39 million people were affected by natural disasters in 2008. The acceleration of global climate change is increasing extreme weather events and natural disasters. Nicaragua is particularly vulnerable to climate-related and other natural disasters, including earthquakes, floods, droughts and hurricanes. In recent years, disasters have become more frequent and intense in the country's Dry Corridor, an area highly vulnerable to extreme climatic events. Long periods of drought, followed by heavy rains, affect the livelihoods of vulnerable families who depend mostly on subsistence agriculture.

The consequences of disasters can be wide-reaching, causing loss of life to people and animals and damaging housing, infrastructure, livelihoods, and the environment. Community resilience determines the degree to which people can recover from the effects of a disaster. Many factors contribute to community resilience, and working animals can play a role – they can provide invaluable support when disaster strikes and afterwards, allowing communities to rebuild their lives.

This study aimed to explore how working equids contribute to the stages of comprehensive disaster risk management in the event of sudden-onset and slow-onset disasters (with a focus on community resilience) and the welfare status of working equids in Nicaragua. Slow-onset disasters are those that emerge gradually over time, for example, droughts. Sudden onset disasters emerge quickly or unexpectedly, such as hurricanes.

The study took place in the north of Nicaragua with communities that had previously been affected by hurricanes in 2020. Semi-structured interviews took place with 201 working equid owners or family members who use and care for them. Most households (95%) visited were in rural locations. To gain additional in-depth viewpoints on the contribution of working equids and their welfare, six focus group discussions were held with 38 people from six communities. Key informant interviews were also conducted with 31 Municipal Disaster Prevention Committees members, which include representatives from City Hall, the ministries of health, education, and economy, firefighters, police, community leaders, political secretaries, and the Agricultural Technology Institute. The welfare of 249 working equids was assessed using Brooke Latin America and Caribbean's Animal Welfare Behaviour and Observation Tool.

Key results:

- 94% of households acknowledged that working equids and their needs are not considered in emergency plans at a community level.
- 90% of the households acknowledged that equids generally suffer some kind of physical risk while helping families in the response and recovery stages of a disaster. Equids are exposed to injuries, fractures, and burns during forest fires and are swept away during floods. Also, health issues such as colic and respiratory problems in equids are frequently observed after a disaster.

Contribution of working equids before, during and after slow-onset disasters

PRE-DISASTER

Preparation of the land for sowing (ploughing), transfer and purchase of agricultural goods.

Soil fumigation before planting crops such as beans, corn, and vegetables.

Transport water and goods such as construction materials and tools and transport families to markets.

RESPONSE

Facilitate solidarity between families and communities by taking food or water reserves where they have drastically decreased.

Support the movement of cattle when there is a food shortage and they must temporarily look for other areas for grazing.

Transport the head of the family to the local market or other communities to buy food and medicines.

POST-DISASTER

Assist in rehabilitating crops by transporting new seedlings and water for the new production cycles.

Equids may be sold, with the extra income used to meet families' needs in terms of health and food or invested in improving their productive capacity.

Support the economic reactivation of families by facilitating the transport of produce to local markets or outside the municipality.

Contribution of working equids before, during and after sudden-onset disasters

PRE-DISASTER

Transfer of reserves of food, water, and other animals to safe areas.

In early warning phases, they are used for reconnaissance work in new areas with high-risk potential.

RESPONSE

Transportation of people and goods. Support the evacuation of sick and injured adults and children to safe areas or shelters.

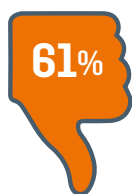
Support search and rescue operations.

POST-DISASTER

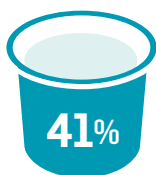
Use horse and/or donkey carts to transport materials to repair damage to buildings such as roofs.

Used to clean up debris and relocate families when the damage is very severe.

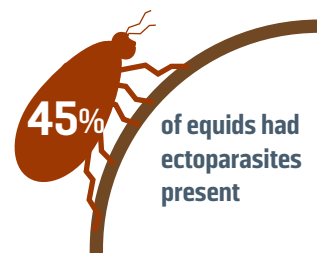
Key equid welfare issues



61% of the equids presented a body condition below what is considered an acceptable range.



41% of equids displayed tiredness and thirst when offered water. Households report that their water-offering practices are restricted due to the availability of water sources and that water is offered once or twice a day.



45% of equids had ectoparasites present



RESEARCH INTO USE

The National System for the Prevention, Mitigation and Attention to Disasters (SINAPRED) has declared Nicaragua a multi-threat nation. Earthquakes, storms, droughts, and floods, among other phenomena, are constantly affecting the country. Brooke is working with SINAPRED, and actions are being taken at national level on the inclusion of working animals in policy.

We encourage national and international development organisations that work with climate-vulnerable communities to acknowledge and incorporate the role of working equids and their welfare into their plans, programmes and projects as part of their strategy to sustain their human and environmental welfare initiatives.

Brooke does not endorse advocating for equids to work more. However in order to advocate for the inclusion of working animals in policy, evidence of their contribution is required. More research on the contribution of equids in disaster risk management and the impacts disasters have on working animal welfare at global level would be beneficial.

Tackling epizootic lymphangitis

Epizootic lymphangitis is a highly contagious fungal infection. The disease causes pain and debilitation to many working equids and has extensive impacts on the potential income earned by the families that own them. For several years, Brooke has been part of an international research collaboration working to increase our understanding of this neglected disease that affects both equine health and human livelihoods.

The research team are pleased to report the launch of the fieldwork element of this research project after a substantial pause due to the COVID-19 pandemic and ongoing challenges with international supply chains.

The Gambian team started recruitment in February 2022, and almost 560 animals joined the cohort. The team revisited all animals in the second half of 2022 and completed the first follow-up by the end of December. They are on course to complete a second follow-up with all animals in May 2023.

The Ethiopian team, which started recruitment at the beginning of October 2022, has so far recruited 220 horses and donkeys and will continue to recruit up to a total of 560 horses until the end of September 2023. Alongside this, they will run a case series with approximately 80 horses to provide a detailed picture of disease progression and treatment response. We will be trialling a thermal infrared camera as a diagnostic tool to assess pathology within limbs over the course of disease.

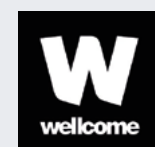
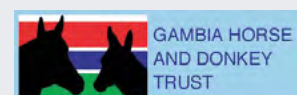
Aside from fieldwork, the teams in both countries are collecting clinical and environmental samples from every animal participating in the study,

working through a range of laboratory tests to assess the animal's clinical parameters and serological status, and preparing samples for work within the molecular laboratory at the University of Liverpool.

Feedback and clinical findings have been given to owners by vets along the way. Laboratory results were sent to regional livestock agents for sharing with individual owners and follow-up with any medical concerns.

The field data collection aims to visit animals at repeated time points during the year to collect information on their general management, feeding and prophylactic health care. We collect data at different times to monitor what changes over the year and to capture seasonal effects such as feed and water supply, grazing and working patterns and activities. This information will be used to look at potential risk factors for exposure to *Histoplasma* in each area. So far, we are seeing a relatively lower number of cases in Gambia than in Ethiopia. This was anticipated as Gambia tends to see sporadic outbreaks of disease in comparison to Ethiopia, which tends to be more endemic with high levels of infection for most of the year. This study will look at the overall differences between these two countries to understand what may be driving infection rates.

We aim to support the development of improved diagnostics and surveillance in these regions to support veterinary decision-making and allocation of resources for treatment. We plan to use the data to inform potential animal care and management recommendations in these environments, and will work closely with communities to share these findings.



The burden of animal diseases in working equids - PhD update

In the last edition, we introduced Girma Asteraye, a PhD candidate undertaking a Brooke-funded PhD within the Global Burden of Disease (GBADS) programme at the University of Liverpool. By contributing to the GBADS programme, we are raising the profile of both working equids and animal welfare.

Girma is now one year into the PhD. Having conducted an extensive literature review and interviews with key stakeholders, he has drafted a paper on the population and economic value of working equids in Ethiopia. The paper is in the process of peer review for publication – follow our social media for updates.

Brooke was delighted to host Girma at our London office during an international meeting of our Country Programme Directors, where he gave an insightful presentation on his work so far. There was much thoughtful discussion about how the findings already contribute to Brooke's work, specifically in understanding working equid populations and their contribution to livestock systems, access to water and food security.

We are also delighted to announce that The Horse Trust is supporting this work through their expertise in administering a grant that will fully fund the costs of the PhD.

Our new Research Strategy will launch in 2023!

In early 2022, Brooke launched our 2025 Global Strategy: A Life Worth Living, and our approaches remain rooted in evidence. Brooke's Global Research Programme is a vital and dynamic part of this. The onset of a new organisational strategy provided an opportunity to re-evaluate the most appropriate way to ensure a successful global applied research programme. This included deciding where to focus research so that it enables organisational objectives and priorities and ensuring that research activities are ethical, planned and communicated to leverage the greatest impact.

Our new research strategy, developed through a consultative process with internal and external stakeholders, will be launched in 2023.

If you would like to receive a copy, please email research@thebrooke.org, and we will add you to our mailing list.



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