



Case Study 02: Strengthening Animal Health Services and Market Systems for Pastoralists

A BORESHA–NABAD Case Study on Public–Private Delivery, Mobile Clinics, and Regulated Drug Access in the Borderlands of Kenya (Mandera County); Somalia (Beled-Hawa and Dollow Districts); Ethiopia (Dollo Ado, Dollo Bay and Mubarak Districts).

EXECUTIVE SUMMARY



In the Kenya–Somalia–Ethiopia borderlands, livestock production is the primary household asset and a critical lifeline of cross-border trade. Yet constant herd mobility, recurrent drought, and insecurity elevate transboundary disease risks while exposing persistent failures in last-mile veterinary service delivery. In remote rangelands, regulated animal health services are often distant or intermittent. Pastoralists and community providers therefore rely on informal drug supply, leading to delayed reporting, incorrect dosing, preventable livestock losses, and heightened risks of antimicrobial resistance. These pressures weaken household incomes and exacerbate local tensions as mobility increases and competition over grazing resources intensifies.

BORESHA–NABAD, funded by the European Union and implemented by a consortium comprising the Danish Refugee Council (Lead), RACIDA across Somalia, Ethiopia, and Kenya, responded by shifting from treating disease outbreaks as isolated emergencies to strengthening the animal health market system itself. Using a Market Systems Development (MSD) approach, the programme facilitated a public–private partnership model that links government veterinary departments, regulated agrovets, and frontline community animal health actors, particularly Community Disease Reporters (CDRs) in Kenya and Community Animal Health Workers (CAHWs) in Somalia and Ethiopia. Through structured coordination mechanisms entangled into a co-creation sessions, mobile clinics, and regulated supply chains, the model has enabled reliable last-mile delivery, improved disease surveillance, reduced community-level drug costs, created viable income pathways for community service providers (CDRs and CHAWs), increased agrovet turnover, and strengthened government response capacity.

The results from this strengthened animal health investment indicate a system-level change taking hold in the borderlands. Specifically, BORESHA–NABAD supported 119 joint vaccination campaigns, reaching 2,265,409 livestock, and facilitated the government veterinary department to train 163 CDRs in disease identification, sampling, referral, and digital reporting through the EpiCollect App. In Mandera County alone, tracer commodities with agrovets and CDRs recorded unit price reductions of 22–38 per cent, alongside significant reductions in the hidden costs of access, such as travel time, transport costs, and the risk of counterfeit drugs. Crucially, government veterinary departments, private agrovets, and community actors now operate in a more coordinated and mutually reinforcing manner, with the BORESHA–NABAD programme facilitating a paradigm shift from parallel delivery to complementary roles across animal health actors.

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I. Context

Animal Health at the Centre of Pastoral Resilience

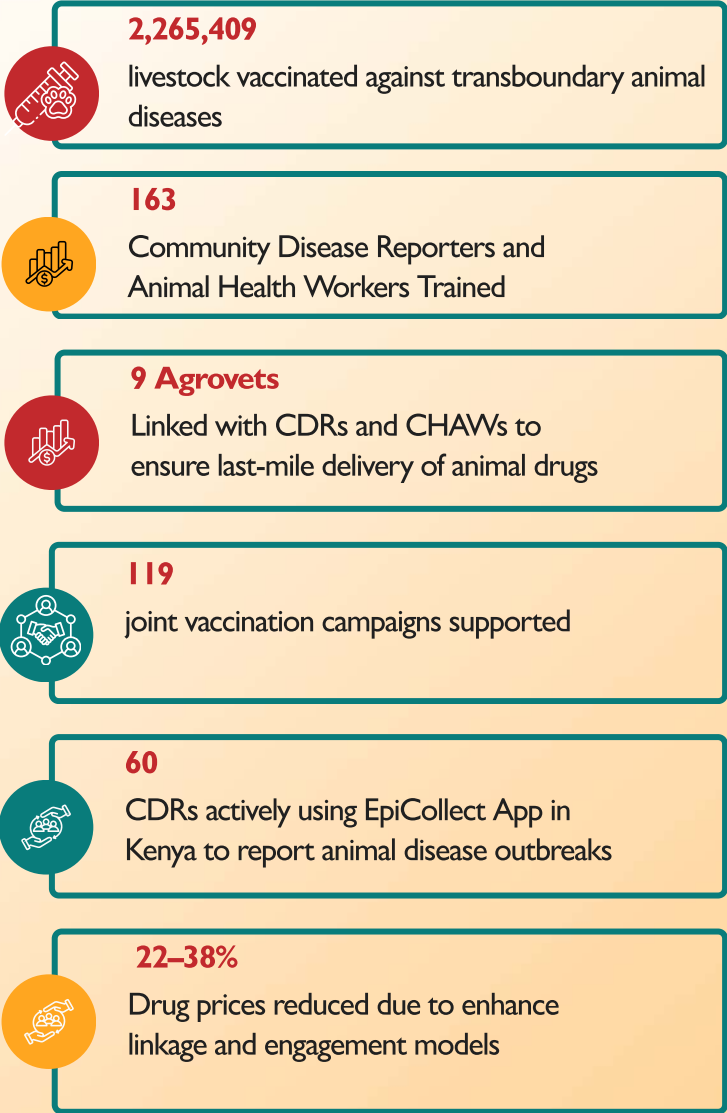
In Mandera County and the adjoining districts of Beled-Hawa and Dollow in Somalia, and Dollo Ado, Dollo Bay, and Mubarak in Ethiopia, pastoralism and agro-pastoralism underpin livelihoods, food security, and local stability. Livestock mobility is a critical factor that enables herds to survive climatic shocks and access markets, but it also increases exposure to contagious diseases as animals converge at grazing corridors, water points, and cross-border markets.



In these fragile environments, timely access to regulated animal health services often determines whether a disease episode remains manageable or escalates into widespread losses, distress sales, and long-term livelihood erosion. Prior to BORESHA–NABAD’s intervention, this access was highly uneven. Regulated drug outlets were concentrated in towns, while remote settlements relied on informal vendors and unverified products. Public veterinary services struggled to maintain consistent outreach across vast rangelands and were frequently drawn into reactive responses rather than preventive care.

This resulted in a predictable cycle where late reporting, inconsistent treatment, avoidable mortality, and recurring economic shocks undermined household resilience and increased vulnerability to conflict and displacement.

Key Results Snapshot Infographic



2. The Core Challenge: Where the Last Mile Breaks Down

Market failure in thin-rangeland economies: In borderland pastoral setups, the last mile is where animal health systems routinely fail. The costs of reaching remote settlements are high, and demand is dispersed, reducing private incentives to serve beyond town centres. For pastoralists, distance inflates the real cost of treatment through transport, time away from herding, and the risk of exposure to poor-quality products.

Fragmented service delivery, parallel roles, weak referrals, limited continuity: Government veterinary departments, agrovets, and last-mile service providers such as CHAWS/CDRS frequently operated in parallel, creating duplication in some areas and gaps in others. Without structured referral pathways, routine coordination, or prescriptions, oversight was inconsistent and episodic, leaving critical coverage gaps.

Delayed surveillance, reporting and response: Disease surveillance and reporting were hindered by inconsistent reporting channels and limited tools at the community level. By the time signals reached veterinary departments, animal morbidity and mortality were often already high, increasing response costs and reducing effectiveness.

Credibility gap, low trust and limited interaction in fragile settings: Inconsistent service availability and variable drug quality undermined community confidence in formal animal health actors. At the same time, formal institutions and agrovets lacked systematic ways to engage community networks beyond episodic campaigns or shopfront transactions. Low trust reduced early reporting and encouraged reliance on the informal supply of substandard drugs.



3. System-Level Intervention

Applying an MSD Lens of strengthening incentives, information flows, and quality assurance to Animal Health



BORESHA–NABAD applied an MSD approach to shift animal health from a project-delivered service toward a self-sustaining market system capable of functioning in fragile, cross-border rangelands. A market systems assessment identified four constraints requiring system-level change. This included weak disease surveillance; limited private participation in remote markets; parallel delivery rather than coordinated provision; and low trust between communities and formal actors.

The intervention strengthened the core market function (regulated drug supply and service delivery) while improving supporting functions (information flows, reporting tools, coordination mechanisms, and financing arrangements such as credit) and reinforcing rules and norms (prescription pathways, role clarity, and oversight).

Rather than “doing or implementing” animal health interventions indefinitely, BORESHA–NABAD focused on facilitating new relationships and routines to lower transaction costs, strengthen information flows, and align incentives across the animal health system. The programme’s role was to crowd in private sector actors, anchor quality assurance through government functions, and make community-based delivery commercially viable and accountable.



4. Enabling Solutions

4.1 Strengthening Coordination and Service Networks

Facilitating Routine coordination forums to operationalise collaboration

To strengthen the foundation of these interventions, BORESHA–NABAD facilitated co-creation sessions between the private sector, government and the community from which the roles and responsibilities were defined. A co-implementation approach was rolled out, with quarterly rotational coordination forums that brought together CDRs, CAHWs, agrovet dealers, sub-county veterinary teams, and community leadership. These forums evolved into operational platforms for reviewing disease signals, clarifying roles, strengthening referrals, and agreeing on practical improvements. Over time, routine interaction reduced fragmentation, improved accountability, and shifted the system from reactive response to coordinated prevention and preparedness.

Strengthening Digital Reporting to Fix Information Flow, Speed, and Credibility

To reduce delayed reporting and strengthen disease surveillance mechanisms, BORESHA–NABAD strengthened the use of the government-owned EpiCollect digital reporting system in Kenya, building on its earlier adoption under the BORESHA III phase. The programme equipped 60 Community Disease Reporters (CDRs) with smartphones, improving reporting consistency, reducing reliance on fragmented phone calls, and strengthening the pathway from community detection to government confirmation and guidance. As disease signals emerge, county rapid response teams can assess reports, trigger sample collection and confirmation, and guide timely treatment, vaccination, or vector control.

4.2 Working with Private Sector Actors

Crowding-In the Private Sector and Making Remote Markets Commercially Viable

BORESHA–NABAD operationalised a Public-Private-Partnership Model (PPP) model linking 60 CDRs, 60+ CAHWs, six agrovet, and six sub-county veterinary officers in Mandera, Kenya, then adapted the approach for Somalia and Ethiopia. The model aligned three functions that previously operated in silos. CDRs and livestock keepers strengthened early reporting through the EpiCollect App. Veterinary officers anchored quality assurance through diagnosis guidance, prescriptions, and seasonal advice on priority agrovet drug stocking. Agrovet responded by stocking regulated products, extending credit to CDRs/CAHWs, and supporting last-mile distribution through structured outreach. This reduced agrovet's commercial risk, lowered market-entry barriers, and enabled incentives for private investment in remote delivery.

4.3 Enabling Last-Mile Drug Delivery Through CDR Mobile Clinics

Bridging regulated inputs and advice closer to grazing corridors through Mobile Clinics

Last-mile delivery was enabled through CDR (Kenya) /CAHWs (Somalia) mobile clinics and door-to-door outreach along grazing routes. Where pastoralists previously travelled to towns or relied on informal vendors, CDR-enabled outreach helped bridge this gap by bringing regulated-agrovet-supplied drugs and advice closer to communities. This improved treatment timeliness, supported correct dosing through prescription pathways, and made drug availability more predictable, particularly when aligned to surveillance information and seasonal risk patterns.



EMERGENCY RAPID
RESPONSE TEAM FOR
TRANSBOUNDARY ANIMAL
DISEASE CONTROL



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5. Results Across the Borderlands

5.1 Co-Delivery and Joint Disease Response

Through strengthened coordination, BORESHA–NABAD supported 119 mass vaccination campaigns implemented jointly with county veterinary departments and CDR networks. In total, 2,265,409 livestock were vaccinated, significantly reducing disease exposure at the herd level and strengthening confidence in coordinated interventions. To sustain surveillance and early warning, 163 CDRs were trained in disease identification, sample collection, referral, and digital reporting. These CDRs now serve as frontline surveillance agents, enabling faster reporting and earlier containment of emerging threats.

5.2 Kenya (Mandera): Private Sector Engagement, Last-Mile Coverage, and Income Pathways

In Kenya, six agrovet stores were engaged as market actors to facilitate the last-mile delivery model. This shift in animal health service provision moved away from a town-based, walk-in model towards a distributed network capable of routinely reaching remote settlements.

Under the BORESHA–NABAD model, 60 CDRs from all six sub-counties accessed certified, veterinary-approved drugs through prescriptions issued by government veterinary officers at 6 agrovet stores, improving treatment quality while reducing reliance on unregulated outlets. In Mandera East, Muktar Abdille, owner of Muzamil Agrovet, described how the partnership transformed both business viability and community access. To make last-mile delivery commercially viable, the six agrovet owners, including Muktar, implemented structured credit and record-keeping systems that enabled CDRs and CAHWs to stock products, deliver services in remote villages, and repay after-sales via M-Pesa.

With expanded outreach through CDR networks, Muktar’s agrovet business grew beyond walk-in trade to a distributed service model. This shift increased turnover by approximately 70 per cent, with reported sales rising from KES 25,000–40,000 per month to KES 10,000–23,000 per week. While seasonal variation remains normal in pastoral economies, the direction of change signals a strengthened commercial incentive to serve remote markets through structured outreach routes.



“FOR 25 YEARS, I STRUGGLED TO STAY AFLOAT. WITH THESE NEW PARTNERSHIPS, I HAVE 10 CDRS CONNECTED TO ME, ENABLING ME TO OFFER STOCK ON CREDIT AND AT A DISCOUNTED PRICE TO MY STOCKHOLDERS. THIS IS CREATING A SUSTAINABLE LOCAL ECONOMY ROOTED IN COOPERATION.”

Abdille Gabanow

Paul Cupunigro



ALMOST 75% OF MY OPERATING COSTS WENT INTO KEEPING DRUGS COLD. THAT LEFT VERY LITTLE SPACE TO GROW. NOW I RELIABLY SUPPLY QUALITY VETERINARY DRUGS TO OVER 34 REGISTERED CAHWS NETWORKS IN DOLLOW.

Hanad Hussein

This income pathway increases the likelihood of service continuity. By earning through legitimate, service-linked sales, CDRs who serve as community focal-point providers can maintain routine outreach rather than rely on opportunistic or sporadic selling.

5.3 Tracer Drug Price Shift and Access Economics

To test how the last-mile model affected affordability and access, BORESHA–NABAD tracked tracer products in Mandera across an operational context of six regulated agrovet stores and 60 CDRs operating along multiple grazing corridors in six sub-counties. Early shifts indicate that the model facilitated reductions in both the unit price paid at the community level and the wider access costs associated with repeated travel to town to access drugs. Agrovet stores now facilitate the shipping or transportation of drugs to hard-to-reach grazing areas, helping multiple CDRs save on transport costs.

Previously, for example, the baseline purchase point for Oxytetracycline LA 20% (100 ml) was a town-based agrovet or an informal vendor. The unit price was KES 400, and average CDR purchasing patterns reflected an access barrier of roughly KES 10,000 per trip, at a frequency of about 2 trips per month, with stock availability fluctuating based on travel ability and cash on hand. Under the BORESHA–NABAD last-mile model, CDRs' mobile clinics accessed supply through linked agrovet stores via regularised restocking and coordinated routes, with drugs available closer to grazing routes and more predictable availability aligned to surveillance and prescriptions. Through this engagement, the unit price fell to KES 250 from KES 400, representing a 37.5% reduction. This shift enabled lower transaction costs and more reliable routes, which allows agrovet stores and CDRs to serve the last mile at a lower effective cost.

For Albendazole 10%, the baseline CDR purchase price was KES 900, with a selling price to pastoralists of approximately KES 1,200 and an average purchase pattern of about KES 20,000 twice per month. After the model was established, the CDR acquisition cost fell to KES 700, a 22.2% reduction (KES 900 to KES 700), while the selling price to pastoralists remained low to around KES 900. In practical terms, this stability strengthened market functioning rather than distorting it: pastoralists experienced predictable pricing, while CDRs improved margins, which increased the incentive for consistent stocking and regular outreach.

5.4 Somalia (Beled-Hawa and Dollow): Co-Creation, Cold Chain, and Formalised Collaboration

In Dollow and Beled-Hawa, BORESHA–NABAD facilitated co-creation meetings and MoUs linking agrovet stores and CAHWs. The programme also facilitated the installation of solar-powered cold-chain solutions at 3 agrovet stores to reduce electricity costs and safeguard drug quality, thereby strengthening regulated supply in a fragile operating environment. Agrovet, which previously spent over USD 250 on electricity, now enjoys savings on these costs through cold-chain drug storage. This cost reduction strengthens the viability of regulated supply and reduces the risk of compromised drugs due to cold-chain breaks, particularly in fragile contexts with unreliable power.



Previously, I was just a lone businessman doing haphazard drug distribution to anyone who claimed to be a CHAW. Since the beginning of 2025, I now have over 15 CAHWs linked to me. I used to spend around 350 dollars a month on electricity alone to store drugs. Now I save that money.

Hanad Hussein Mohamed,
owner of Agrovet Alliance Company,



5.5 Ethiopia (Dollo Ado, Dollo Bay and Mubarak): Replication and Corridor-Level Resilience

In Ethiopia's Somali Region, BORESHA–NABAD adapted and replicated the agrovet-linked approach across Dollo Ado, Dollo Bay and Mubarak Districts. This replication matters because cross-border disease risks do not respect administrative boundaries; stronger surveillance, clearer roles, and improved regulated access to inputs across multiple connected districts increase resilience at the corridor level. The programme is also leveraging agrovet market actors to strengthen resilience through broader input supply and associated market linkages, supporting predictable arrangements that reduce volatility for pastoral and agro-pastoral households.

5.6 Co-Investment and Sustainability

BORESHA–NABAD provided logistical support valued at £14,000 for surveillance exercises, while government veterinary departments contributed laboratory services and personnel valued at £11,000. This co-investment is a hallmark of sustainability: it demonstrates shared ownership and reduces dependency on project-led responses. It also strengthens the norm that surveillance and response are collective functions supported by a functioning market rather than substituting for it.

6. Outcome – Systemic Change Taking Hold

The most important outcome is a shift in how the system functions. Disease surveillance is increasingly proactive and community-anchored, supported by digital reporting, clearer referral pathways, and improved trust that reporting leads to response. Agrovet–CDR/CAHW partnerships have strengthened last-mile delivery, reducing reliance on emergency campaigns as the only access mechanism. Private sector participation has increased in remote markets, improving availability, affordability, and quality assurance of veterinary inputs. In Mandera, tracer products show unit cost reductions of 22–38%, and the model reduced the broader access costs associated with repeated travel to town. This has improved the economics of access for pastoralists and strengthened incentives for community providers to deliver consistent outreach.

At the same time, CDRs and CAHWs are earning income from service-linked sales, while agrovet benefit from steadier turnover through distributed routes rather than sporadic bulk purchasing. Government veterinary departments are working more harmoniously with community and private actors, facilitated by BORESHA–NABAD, resulting in a coordinated system where oversight, supply, and last-mile service reinforce one another.



Lessons Learned

This case study underpins that durable animal health gains in pastoral borderlands depend on strengthening the market system and the governance relationships that sustain it. The lessons below offer valuable insights for actors interested in this approach.

Lesson 1: Design last-mile delivery as a market function, not a project logistics add-on

The last mile becomes sustainable when it is economically rational for private suppliers and community providers. BORESHA–NABAD’s model converted dispersed pastoral demand into viable routes by linking agrovets to CDR/CAHW networks and aligning restocking to coordinated outreach and prescriptions by veterinary officers. This “crowding-in” logic reduced risk for agrovets, created predictable turnover, and increased the likelihood of service continuity after project support ends.

Lesson 2: Make quality assurance visible and practical through prescriptions and oversight

Improved access is not enough if quality is uncertain. Anchoring prescriptions, diagnosis guidance, and seasonal stocking advice within government veterinary functions strengthened the rules and norms that protect quality. This increased trust in regulated drugs and reduced reliance on informal supply, while also improving treatment effectiveness and supporting more responsible drug use.

Lesson 3: Digital reporting works when it is embedded in routines and linked to response

Providing tools does not automatically improve surveillance. BORESHA–NABAD combined digital reporting (EpiCollect and smartphones) with routine coordination meetings and defined response pathways. This ensured that community-level signals translated into assessment, sample confirmation, and action. The result was faster detection, stronger credibility, and increased willingness to report early.

Lesson 4: Affordability is achieved by reducing both unit prices and hidden costs

In Mandera, tracer medicines showed measurable reductions in unit costs: Oxytetracycline LA 20% fell by 37.5%, and Albendazole acquisition costs fell by 22.2%. Equally important, access shifted from episodic town travel to route-based availability close to grazing corridors, reducing transport and time costs and lowering the risk of buying ineffective products. This combination enables earlier treatment, reduces losses, and improves household resilience.

Lesson 5: Sustainability depends on aligned incentives where every actor benefits

Systems persist when each actor gains value ethically and transparently. In this model, pastoralists benefit from reliable access and improved outcomes; CDRs/CAHWs gain earnings through service-linked sales and improved margins; agrovets gain expanded reach and steadier turnover; and government gains earlier disease detection and more coordinated response. BORESHA–NABAD’s facilitation worked because it reduced coordination costs and helped actors adopt routines that are rewarding enough to maintain.

THE BORESHA-NABAD CONSORTIUM



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