



THE ECONOMIC COSTS OF CONFLICT AND THE BENEFITS OF PEACE:

Effects of Farmer-Pastoralist Conflict in Nigeria's Middle Belt on Households

OVERVIEW

Farmer and pastoralist communities in Nigeria's Middle Belt region have long suffered from violent conflict that is largely centered on competition for key natural resources, such as land and water. In addition to the obvious and devastating costs in human life, these conflicts take an enormous toll on the economic health of families and households and undermine local economic progress. A Mercy Corps study conducted in 2013 showed that 39% of pastoralist and farmer community members in Kaduna and Nasarawa had failed to pursue their livelihoods over long stretches of time due to fear or insecurity. Likewise, eroded trust due to violent conflict was found to prevent productive economic behavior.

However, prior to this study, the economic cost of farmer-pastoralist conflict to households has been understood primarily in anecdotal terms. This study seeks to quantify the economic costs of ongoing farmer-pastoralist conflict in order to provide a more comprehensive understanding of what constituents and communities lose during and after violent conflict. It also, uniquely,

Key Findings

- The average household affected by farmer-pastoralist conflict would experience at least a 64% increase in income, and potentially 210% or higher increase in income, if these conflicts were reduced to near zero.
- The loss of household income due to these conflicts results in up to a 2.9% loss in potential GDP for the study states, including both formal and informal economies.
- When asked how much they would be willing to pay to be able to carry out various livelihood activities in the absence of conflict, respondents reported being willing to pay an average of 14%, and as high as 19%, of the total costs of conflict to ensure peace.

examines the economic effects of ongoing inter-communal conflict on the average household, whereas other literature globally has focused on the economic effects of civil war. Finally, this study also addresses the economic benefits that hypothetical peace would bring to households, emphasizing the important role that peacebuilding and security initiatives can play in improving household, community, and state welfare.

BACKGROUND

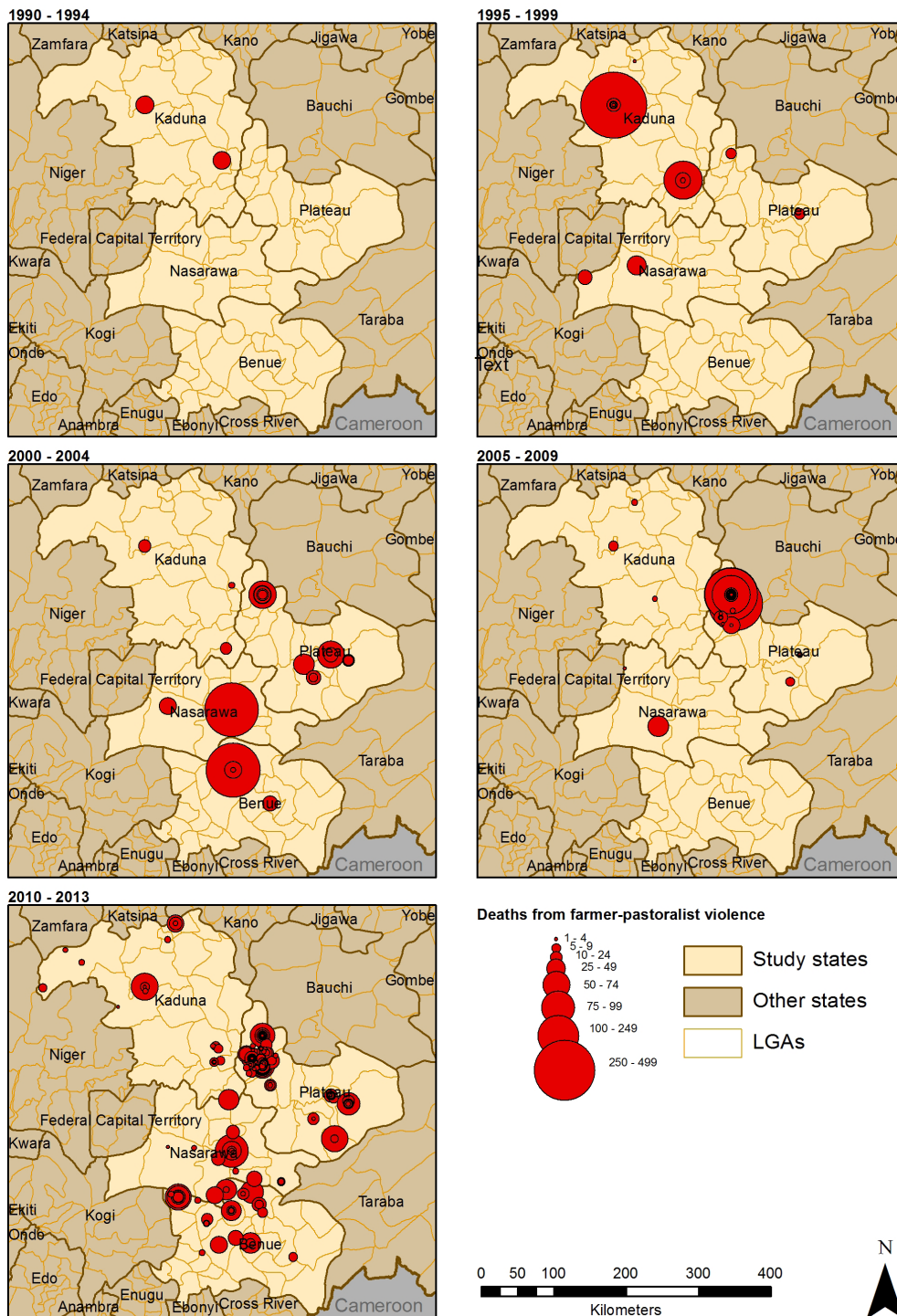
In Nigeria's ethnically and religiously diverse Middle Belt, violent conflict between pastoralists and farmers arises from disputes over the use of resources such as farmland, grazing areas, stock routes, and water points for both animals and households. A range of factors underlies these disputes, including increased competition for land (potentially driven in part by desertification, climate change, and population growth), lack of clarity around the demarcation of pasture and stock routes, and the breakdown of traditional relationships and formal agreements between pastoralists and farmers. Because livelihood strategies in Nigeria are closely tied to identity and because access to services and opportunities can vary across identity groups, many farmer-pastoralist conflicts take on ethnic and religious hues and are exacerbated along identity lines.



Community members in the Middle Belt have long suffered from reduced earnings due to persistent conflict. Mercy Corps program participants shown here, in Kaduna, have initiated joint economic projects between farmers and pastoralists in order to increase their economic activity while preventing a return to conflict.

The magnitude of this conflict, and the degree to which farmer-pastoralist incidents have increased over time and space, is evidenced in the figures below:

FIGURE 1. Deaths due to farmer-pastoralist violence in the study states by 5-year increments



(with the most recent period truncated)¹

¹ In the course of this study, researchers catalogued incidents of farmer-pastoralist violence from a comprehensive dataset constructed using two sources, the UCDP Georeferenced Event Dataset (GED) and the Armed Conflict Location and Event Dataset (ACLED) for Nigeria for all available years. Mercy Corps staff then coded and culled individual violent incidents to include those involving only actors that could be related to farmer-pastoralist conflict.

Mercy Corps' Conciliation in Nigeria through Community-Based Conflict Management and Cooperative Use of Resources (CONCUR) program, which began in December 2012, aims to reduce farmer-pastoralist conflicts and increase economic activity among key communities in the Middle Belt, specifically in the states of Benue, Kaduna, Nasarawa, and Plateau. Funded by the UK Department for International Development (DFID), CONCUR works to 1) increase the capacity of local leaders to resolve community conflicts in an inclusive, sustainable manner; 2) increase cooperation across conflict lines around economic activity and natural resource management; and 3) increase support for long-term policy solutions among local and national leaders through business-led research and advocacy.

RESEARCH QUESTIONS

The purpose of this study is to provide a detailed analysis of the microeconomic effects of conflict and potential effects of peace, through the following research questions:

- 1) What is the effect of farmer-pastoralist conflict on household income, both in general and by livelihood strategy?
- 2) What would be the effect of peace on household welfare, both in general and by livelihood strategy?

While it is understood that many actors do reap economic benefits from conflict, this study focuses on the overwhelming economic costs of conflict and benefits of peace to average households.² Mercy Corps also acknowledges that communities incur enormous social, as well as indirect economic, costs. Because of its narrow scope, this study does not address the social costs of conflict such as lives lost, relationships broken, services disrupted, or trauma induced, nor does it address the ways that conflict may indirectly affect household economics, such as preventing children from going to school or enabling crime. These important topics warrant further research.

METHODS

To address the first research question, researchers estimated the potential earned household income if violence were reduced to near-zero levels. Data on household incomes and experiences of violence are based on an original household-level cluster-sample survey of more than 1600 respondents administered in Benue, Kaduna, Nasarawa, and Plateau.³ These data also inform the second research question (see below).

TABLE 1. The table below breaks down the respondent population by religion and primary livelihood strategy.

Primary Livelihood	Muslim	Christian	Other	Total
Farming	262	643	9	914
Farming/Pastoralism	25	2	0	27
Pastoralism	393	56	1	450
Other	65	145	1	211
Total	745	846	11	1602

² In actuality, both conflict and peace produce economic costs and benefits. For example, cattle rustling imposes a cost on the original owner of the cattle and produces a benefit for the thief. However, sufficient prior evidence demonstrates that the effect of conflict for the majority of households is negative and the effect of peace on the majority of households is positive, such that it is meaningful to explore the costs of conflict and the benefits of peace at the micro level.

³ The survey design and sampling frame are available in the full report upon request.

The basic methodology for the first question followed three steps: First, researchers ran a 2-stage instrumental variable (IV) model to estimate the size of the relationship between violence and household income. Second, they used a population attributable fraction (PAF) calculation to estimate the effect of a hypothetical reduction in violence to near-zero levels on rural income for the entire study region. Third, researchers predicted the income levels for each state as a result of reducing violence to near-zero levels, which provides average results specific to each state.

The second research question differs fundamentally from the first question, in that it implies the construction of a hypothetical prospective scenario: What would the difference be between income under present conditions and income under conditions of peace going forward? In other words, what is the microeconomic benefit of peace at the household level? Whereas the first research question assesses the costs of conflict in the past, this research question attempts to measure the would-be benefits of increased peacefulness in a hypothetical future. This framing recognizes that the benefits of increased peacefulness are not only the inverse of the costs of conflict.

To construct this prospective scenario, Mercy Corps asked respondents to disclose what amount they would be willing to pay in order to guarantee a perfectly peaceful community.⁴ The idea is that “rational” individuals are willing to pay for a public good up to that amount that the public good benefits them. The benefits of peace may include monetary forms (for example, the ability to farm a field previously abandoned due to security concerns, the avoidance of destruction of capital, or the lost productivity due to death and injuries) as well as non-monetary benefits (for example, avoiding emotional damages and death, in excess of the lost productivity they may entail).

In order to encourage systematic valuations, respondents were asked to estimate the value of 13 specific hypothetical scenarios in which they could ensure certain activities or situations without fear of violence, for the coming year, such as access to the marketplace, access to fields and farms, ability to move livestock to grazing pastures, ability to go to school, and a feeling of security. Following these questions, respondents were asked what they would be willing to pay overall for “the absence of any violent clashes in their community.” Initial results prompted extremely high valuations, in the quadrillions of naira, which indicates that to community members “peace is priceless.” However, in order to analyze a more realistic set of responses, researchers estimated the overall value of a lack of farmer-pastoralist clashes by adding up responses to the first 13, more specific, scenarios excluding outliers.⁵ Because the unit of analysis for this study is the household, specific economic effects of conflict and peace on women, men, female youth, male youth, and children could not be discerned and would be an important area for further study.

FINDINGS

Effects of conflict on household income

By running a series of regressions on income and exposure to violence, researchers found that the relationship between the two was universally negative, and almost always significant, for various econometric models. In the table below, the estimate basically represents the percentage increase of income that a household would experience if there were no farmer-pastoralist violence. For example, in the third model, using state-level variables, a household would theoretically increase its income by 201% in a hypothetical scenario of peace.

4 This approach is termed a hedonic pricing or contingent valuation model. For an example of the concept of willingness to pay being used to assess the costs of conflict, see Hess (2003). Even Hess, however, does not distinguish between cost of conflict (the term he uses) and benefits of peace (which arguably describe the outcomes of the technique better).

5 For the full methodology, please see the full Mercy Corps report, available upon request.

TABLE 2. Income change coefficients for violence reduction

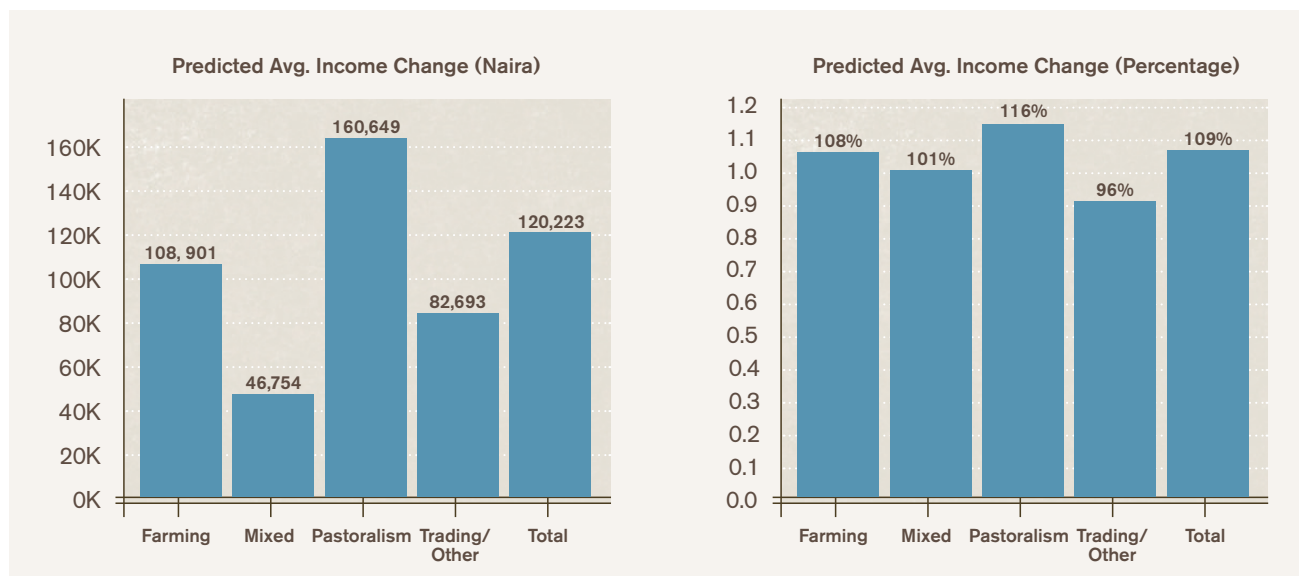
Model	Description of Control Variables Used	Estimated Income Increase
1	No control variable used	354.37
2	Household variations (number of members, number of children)	45.35
3	State level variables	2.01
4	Combined household and state level variables	2.1
5	Cluster-level variables	0.64
6	Combined household and cluster-level controls	0.64

The six models differ by their degree of specificity in demonstrating the relationship between violence and household income. For example, Model 1 uses no control variables and estimates the largest change in income for a given level of violence at 35,437%. Model 3, which employs categorical controls at the state level, predicts that the absence of violence would yield a 201% increase in rural incomes. Model 6, which includes specific control variables at the household level and categorical controls at the cluster level, yields the smallest coefficient, indicating that reducing violence would yield a 64% increase in total rural income. That the coefficients are consistently diminishing with increased specificity in the control variables suggests that there does exist a believable relationship: household incomes decline in the presence of violence.

Adjusted predictions may also be broken out by livelihood category. As the table below shows, across farmer and pastoralist communities, households stand to increase their income levels by more than 109% if there were no inter-communal violence.⁶

*Across farmer and pastoralist communities,
households stand to increase their income levels by more than 109%
if there were no inter-communal violence.*

CHART 1. Adjusted predictions of income changes due to hypothetical violence reduction by livelihood.



(Based on Model 4.)

⁶ The total figures differ slightly from those in the previous table because control variables describing income from various livelihood strategies had to be dropped to allow specification of the livelihood strategy itself.

In order to determine the broader effect of these household income losses on states, researchers made calculations based on these findings and state-level statistics. According to the 2013 National Demographic and Health Survey (DHS) of the National Population Commission, the population of Nigeria is 57.9 percent rural and 42.1 percent urban, or 93,589,088 people in rural areas according to the World Bank. An earlier National Population Commission survey reports similar national statistics (62.8 percent rural and 37.2 percent urban), but also reveals that the four study states have largely rural populations: 81.4 percent rural in Benue, 65.5 percent in Kaduna, 81.3 percent in Nasarawa, and 65.28 percent in Plateau.

According to the 2006 census, Benue has 4,253,641 people, Kaduna 6,066,562, Nasarawa 2,040,097, and Plateau 3,178,712. The survey-adjusted means for household size for those states are 10.16, 10.07, 14.34, and 8.12, respectively. Multiplying the state populations by the respective state rural population percentages gives the rural population; that is divided that by the average rural household size by state to obtain total rural households in each of the study states. The estimated total income effect of a hypothetical reduction in these conflicts, presented in the table below, is based on the conservative assumption that farmer-pastoralist conflict only has a direct effect on the incomes of rural households.

The aggregate microeconomic costs of farmer-pastoralist violence reaches up to US\$9.2 billion annually. This constitutes about 2.9% of the total—formal and informal—economies in the study states.

This sum represents roughly 10.2% of the combined official state domestic products in the study area. However, by adjusting percentages to include both the formal and informal economies, then the microeconomic costs of farmer-pastoralist conflict to the total economy hovers at around 2.9%.

TABLE 3. Estimated total rural income costs of conflict (in 1000s) by state due to hypothetical violence reduction

State	No. Rural HHs	Currency	Estimated Cost to Rural Income (1,000)		State GDP 2014*	Losses as a %-age of state GDP	Losses as %-age of Formal + Informal Economy
			Model 3	Model 4			
Benue	340,632	Naira	1,659,797,389	362,609,947	3,612,921,757		
		USD	10,108,166	2,208,295	22,002,693	9.1%	2.6%
Kaduna	394,765	Naira	313,464,164	401,614,900	5,439,384,242		
		USD	1,908,997	2,445,835	33,125,850	6.9%	2.0%
Nasarawa	115,659	Naira	267,667,675	153,627,754	1,590,654,072		
		USD	1,630,096	935,593	9,687,083	8.8%	2.5%
Plateau	255,555	Naira	465,840,239	592,796,202	2,712,849,466		
		USD	2,836,967	3,610,129	16,521,253	17.9%	5.2%
Total	1,106,611	Naira	2,706,769,467	1,510,648,803	13,355,809,536		
		USD	16,484,226	9,199,851	81,336,880	10.2%	2.9%

*Based on 2007 estimates from the Canback Global Income Distribution Database (C-GIDD), updated for GDP growth and inflation to 2014.

**Based on Model 4 estimates.

Potential Effects of Peace on Household Welfare

By adding up the values estimated by respondents of their ability to pursue certain livelihood activities in the absence of conflict, researchers found that the estimated total welfare value of peace varies considerably by state. The table below illustrates these variations.⁷ Multiplying the household means by the number of rural households in each state yields the total rural contingent valuation of farmer-pastoralist peace. As the results show, household members report being willing to spend up to 19% (Kaduna) of the calculated costs of conflict in order to reduce farmer-pastoralist conflict to near zero.

TABLE 4. Survey-adjusted mean and total contingent valuation of farmer-pastoralist peace by study state.

State	No. Rural Households	Currency	Mean Contingent Valuation (1,000)	Total Rural Contingent Valuation (1,000)	Microeconomic Costs of Conflict (1,000)*	Valuation as Proportion of Costs
Benue	242,292	Naira	169	41,036,813	257,925,257	16%
		USD	1.0	249,914	1,570,765	16%
Kaduna	348,960	Naira	190	66,386,127	355,015,309	19%
		USD	1.2	404,292	2,162,043	19%
Nasarawa	82,370	Naira	71	5,835,494	109,410,171	5%
		USD	0.4	35,538	666,308	5%
Plateau	226,595	Naira	304	68,951,123	525,618,685	13%
		USD	1.9	419,912	3,201,018	13%
Total	900,217	Naira	735	182,209,557	1,247,969,422	15%
		USD	4	1,109,656	7,600,134	15%

*As calculated in Model 4.

These contingent valuations of peace are universally much lower than the costs of conflict calculated under the previous research question. One possible explanation is that the results may be underestimating the contingent valuation of “peace” in rural communities, either because the list of scenarios inadvertently omitted important ways in which violence affects livelihoods, or because households consistently underestimate their own risk of being affected by violence. This latter possibility is likely to be the case to some extent, according to the psychological theory of optimism bias,⁸ which has been convincingly shown in the political science literature to cause those living in conflict-affected settings to downplay the risk of losses.⁹

Another interpretation of the contradictory regression model results is that more violence-affected households do tend to value peace more than less violence-affected households in their communities, but that they also tend to live in communities in which peace may not be highly valued. This interpretation may reflect that communities that more generally value peace less will likely tend to be more violent. This latter theory would need to be developed further, but if it is true, the case for effective and swift intervention, in order to end cycles of violence and “de-normalize” conflict, is paramount for long-term development.

⁷ The survey-adjusted means of all contingent valuation questions are available upon request.

⁸ Chapin and Coleman (2009)

⁹ Petersen (2001)

RECOMMENDATIONS

This study makes clear that households suffer beyond the devastating losses of family members, injury, trauma, and fear; farmer-pastoralist conflict deeply damages the well-being of households and communities. The findings suggest that in order to ensure sustainable economic progress, improving the management and prevention of inter-communal conflict in the Middle Belt is essential. Select leaders in government, business, and civil society have agreed through a series of consultations that in order to realize the economic benefits of sustained peace, the Nigerian government should take action in the areas below.¹⁰ These represent only a few priorities of the available policy solutions that will contribute to peace in the Middle Belt:

Establish and Fund Grazing Reserves and Stock Routes

Although the Grazing Reserve Law of 1965 provided for the establishment and management of grazing reserves, few such lands have actually been acquired and marked. As a result, farmers have encroached on land once designated for grazing, and pastoralists wishing to settle have limited legal options.

- The National Assembly should review and pass the bill currently under consideration that seeks to create a National Grazing Reserve Establishment and Development Commission. This Commission will work with states to review existing reserves, assess priorities for establishing new reserves, and provide infrastructure and services for all reserves.
- To strengthen enforcement of existing laws, state governments should raise public awareness about existing grazing reserves and stock routes, as well as land use regulations.



Strengthen Conflict Management Mechanisms

Few dispute resolution mechanisms or reconciliation processes are considered effective or truly representative across farmer and pastoralist communities.

- State governments should establish or strengthen representative conflict management committees that include traditional, religious, youth, and women leaders; civil society and human rights representatives; security officials; and government leaders.
- State and national governments should support the establishment of community-sanctioned, formalized alternative dispute resolution mechanisms.

Improve Security and Justice Systems

Security agents often lack the resources to respond adequately to conflict, and deep mistrust—caused by security agencies' impunity, inability to respond, or biases—between communities and officials hampers an effective response.

¹⁰ Since February 2015, Mercy Corps has facilitated seven policy forums at state and national levels, where we have shared the research findings, involving more than 150 Nigerian leaders in business, civil society, government, policy, media, and security. The recommendations herewith are the product of these forums, and we are indebted to these leaders for their contributions.

- States should strengthen existing joint task forces, including military, police, government, and judicial actors, responsible for passing recommendations to the national level, communicating key initiatives to the public, and liaising with community leaders.
- The police command should deploy more resources, including personnel, communications equipment, and logistics support, to hotspots for farmer-pastoralist conflict and should train personnel on conflict sensitivity and human rights.

Support Agricultural and Livestock Production

By relying on traditional methods, farmers and pastoralists are missing opportunities for increased productivity of land and herds. Furthermore, the lack of a proper herd tracking system allows for widespread cattle rustling, which exacerbates farmer-pastoralist conflict.

- State Ministries of Agriculture should increase funding for livestock and veterinarian extension workers who can support the health of herds, and for farming extension workers who can provide on-site training in modern farming techniques.
- The federal and state Ministries of Agriculture should enact a comprehensive plan to track livestock at state and local levels and regulate the sale and slaughter of all cattle in the country.
- The federal and state governments should support livelihood restoration for farmer and pastoralist communities devastated by violent conflicts. Integrated interventions may include joint economic initiatives across conflict lines, youth capacity development, and financing and investments in soil and pasture rehabilitation.

Through coordination among government, business, community, and civil society actors, Nigerians can begin to reverse the enormous costs of farmer-pastoralist conflict and enjoy the economic growth that will come with sustained peace.

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