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Impact of the Mobile Telecommunication Network's Milk Flow Project on the Livelihoods of Pastoralists in Ladugga Grazing Reserve, Kaduna State, Nigeria

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Abstract

The paper aims at assessing the impact of Mobile Telecommunication Network (MTN) Milk-Flow Project on the livelihoods of pastoralists in Ladugga Grazing Reserve in Kaduna State, Nigeria. A structured questionnaire was administered to 242 pastoralists in Ladugga. To complement the quantitative source of data, Focus Group Discussions (FGDs) and in-depth interviews (IDIs) were conducted to assess the benefits and impact of the Milk Flow Project. A total of four (4) FGD and four (4) IDIs were held with Fulani pastoralists and stakeholders in Ladugga Grazing Reserve. The mean age for male respondents was 55 years while that of the females was 42 years. The result reveals that the milk-flow project has led to: formation and membership of cooperative societies; significant increase in milk production and consequently income; a reduction in morbidity and mortality rates of cows due to better health seeking behaviours; the development of pasture farms and an increase in school enrolment. The paper suggested the need to encourage more private sector participation in supporting pastoralists' livelihoods within the grazing reserve systems.

Keywords: Fulani pastoralists, grazing reserve, livelihoods

Introduction

The Guinea and Sahel Savannas ecosystems that are home to over 90% of the Fulani herdsmen in Nigeria have become very vulnerable (Folami, 2010). Rapid population growth has led to the expansion of people into the ecology of the pastoralists in Africa leading to scarcity of grazing areas (Reckers, 1997). A cocktail of statistics indicates that at current trend the ability of different ecosystems to provide food, water and shelter is compromised by changes in climatic events (Nicholls and Lowe, 2004; International Organization for Migration, 2008). Climatic uncertainties decrease people's ability to grow food and livestock sustainably especially in developing countries (Ziska, 2010). Recent happenings in the world

economy and the frequency to which new diseases that affect agriculture and livestock production occurs have raised questions about the state of food security especially in Africa, against the backdrop of the continuous increase in population numbers (Naylor and Falcon, 2010).

The challenges facing most societies in the world today as regards food security have necessitated the evolution of different methods of boosting food supply and ensuring sustainable use of resources. Some of the methods aimed at boosting food supply include, the use of hybrid varieties and exotic breeds, application of fertilizers and pesticides and the involvement of the private sector in agriculture.

Nigeria, with a population of about 168.8 million people (World Bank, 2013), is grossly underprovided with essential food components like protein, which is important for the realization and development of both the mental and physical potentials of human beings. Nigeria's agriculture is dependent on rainfall with a very small proportion engaged in irrigation. Unfortunately, rainfall variability and associated droughts coupled with wrong implementation of government policies have been major causes of food shortages in Nigeria.

Although, there is the dearth of data on dairy farms and milk production in Africa in general and indeed Nigeria in particular (Millogo *et al.*, 2008), the production of milk which is rich especially for children, has either decreased in most areas or has remained unchanged in the last two decades against rising human population. The annual national milk requirement in Nigeria is estimated at 1.5 billion litres, however, only 1% of this total demand is met locally (National Bureau of Statistics, 2009). This translates to less than 10 litres per head. The global average is about 40 litres per head while in most parts of Africa it is 28 litres per head. There are several factors responsible for the progressive decline in the quantity of milk produced. Some of the reasons include; changes in climatic events, low milk yield of the dominant cow specie (Zebu), shorter shelf life, high somatic cell count and prevalence of tsetse fly (Millogo *et al.*, 2008; Laah, 2011).

Researchers have argued that the participation of the private sector in food production in Nigeria has not been encouraging and even the few that are involved not much is known of the impact of their projects or programmes on the livelihoods of the people (Afrique Avenir, 2011). The World Bank (WB) has blamed the setback in Nigeria's agricultural development to the non-participation of the private sector and the visible under-investment by government. It also believes that the

participation of the private sector will unlock the country's agricultural potentials (Afrique Avenir, 2011).

The study area

Ladugga Grazing Reserve (LGR) has a land area of 71,311 hectares and located between Latitudes 10°04" and 10°12" North of the Equator, and between Longitudes 7°59" and 8°10" East of the Greenwich Meridian. The Ladugga Grazing Reserve was carved out of three Local Government Areas, namely; Zango Kataf (70%), Kachia (20%) and Kajuru (10%). The area falls under the high plains of northern Nigeria. The geology of the area consists mainly of pre-cambrian rocks of the basement complex (Barbour *et al.*, 1982). The grazing reserve has an undulating gentle slope that is heavily dissected by several tributaries of the river Kaduna towards the eastern and northern parts. The area generally lies between 560 to 700 meters above sea level and has two distinct climatic seasons; the wet and dry seasons. The wet season occurs between April and October (7 months) while the dry season is between the months of November and March (5 months). Ladugga area has a mean annual rainfall of about 1520 meters with the highest rainfall occurring in the months of August and September (Abbas, 2010). The original vegetation of the area is largely the Guinea Savanna type, but due to excessive bush burning and felling of trees, what remains of the vegetation are patches of woodland with trees that rise to maximum height of 15 meters.

The population of Ladugga Grazing Reserve is estimated to be between 15,000 and 25,000 people and almost 100% of the population is Fulani pastoralists. In the last three (3) years the population of the area has increased rapidly because of the influx of Fulani pastoralists into the grazing reserve. The influx of the pastoralists into the grazing reserve is due to the increase in the frequency and intensity of conflicts between the pastoralists and sedentary farmers in the adjoining areas. The pastoralists in Ladugga

live in *unguwa* settlements (hamlets). These settlements are scattered around the reserve. In terms of the administrative structure, Ladugga Grazing Reserve is under Zango Kataf Local Government Area, while politically it is under Kachia Local Government Area.

The Fulani pastoralists have a social structure that recognizes the *ardo* (clan leader or chief) as the leader of the group. Although, Ladugga Grazing Reserve was meant to be used by Fulani pastoralists for the sole purpose of grazing, most Fulanis in the grazing reserve are agro-pastoralists, that is, they combine farming of crops/legumes with cattle rearing. Farming here is done in small scale and crops grown include sorghum, millet, maize, cocoyam, yam and groundnut. The average household herd size varies between 20 and 35 cows. In spite of the combination of farming and cattle rearing the economic capacity of an average Fulani man in Ladugga is limited and he is not able to provide enough for his family.

Description of the milk-flow project

The Milk Flow project is one of the Mobile Telecommunication Network of Nigeria (MTNN) Corporate Social Responsibility (CSR) projects under its Health, Education and Economic Empowerment Portfolios. MTN is the major mobile telecommunication company in Nigeria with network coverage in all 774 Local Government Areas in Nigeria. These projects are being executed all over Nigeria and are designed to impact upon the quality of life of the people in various communities. The Milk Flow project was a 2-year project funded by MTN Foundation in

partnership with a private dairy farm, Integrated Dairy Limited (IDL), Vom, Plateau State. MTN Foundation provided funds and logistics to IDL and IDL in turn provided the hybrid bulls and also supervised the implementation of the project. The project was implemented in three states of Nigeria, namely; Bauchi, Kaduna and Plateau States. This paper is an evaluation of the implementation of the project in Kaduna State. The project was initially planned for between August 2007 and July 2009, however, the implementation extended to middle of 2010. The full benefits of the project was expected to start manifesting from December 2012 when the first set of the calves were expected to be between three (3) and four (4) years old and thus start their own cycle of reproduction. Table 1 shows the items that were supplied or installed by MTN in collaboration with IDL for the successful execution of the project.

Base on field observation and document review, Integrated Dairy Limited has a history of involvement in the dairy industry in Nigeria. The company was established in 1986 and incorporated in April, 2003. The company is generally known as Farm Fresh® which is the brand name of most of its product. The company is located on 550 hectares of land on the highlands of Vom, Plateau State and as at 2012, the company had staff strength of 150 employees comprising experienced Veterinary Doctors, Agricultural Professionals and expatriates. IDL had over 580 Holstein Friesian herds out of which 160 are lactating cows producing an average of about 3200 litres of milk per day (20 litres/cow).

Table 1: Distribution by items installed/provided for the milk flow project

Items	Number to be Installed/ Supplied	Number Supplied/ Installed	Proportion of items supplied/ Installed (%)
Tractors	1	1	100.0
Mobile Milking machines	10	10	100.0
Freisbian Bulls	70	63**	90.0
Hilux pickup	1	1	100.0
Motorbike	3	3	100.0

First Aid Box	3	3	100.0
Borehole	2	0*	0.0
Artificial Insemination kits & Accessories	3	3	100.0
Mobile phones, SIMs, antenna & airtime	200***	0	0.0
LN ₂	3	3	100.0

*Borehole not drilled

** Three of the bulls had died as at the time of this study

*** MTNF was yet to supply the items

The goal of the project was to economically empower the Fulani pastoralists through production of improved animal breeds that will increase the volume and quality of milk produced for sale. Table 1 show that items installed or supplied for the project. The underlying objectives of the project were to: (a) increase the volume and quality of milk produced for sale (b) encourage the Fulani pastoralists to adopt the sedentary lifestyle rather than the nomadic lifestyle and (c) assist the Fulani pastoralists to have easy access to social amenities such as schools for their children, hospitals for the pastoralists and veterinary clinics for their animals. After two years of the cessation of the project, this study sought to assess the impact of the project on household livelihoods.

Data and methods

The data for this study was obtained through a combination of quantitative and qualitative methods of data collection. Project beneficiaries-based data were sourced from beneficiaries of the MTN Milk Flow project using questionnaire, Focus Group Discussions (FGDs) and In-depth Interview (IDIs). The questionnaire was administered to 242 heads of households in Ladugga Grazing Reserve. The questionnaire elicited information on basic socio-demographic characteristics of age, sex, marital status, type of marital union, level of education, number of cows owned, membership of cooperative society and mortality rates of cows and calves. The questionnaire also sought robust information on knowledge and participation in the MTN milk flow project, livelihood activities, quantity of milk produced, income generated and other benefits of the MTN project.

To complement the questionnaire, a total of four (4) Focus Group Discussions (FGDs) were conducted with an average of 10 persons per FGD. The cooperative societies had average membership of 36 households per cooperative society. Also, four (4) in-depth interviews (IDIs) were conducted with the District Head of Ladugga Grazing Reserve, the Headmaster of Ladugga Primary School, the Project Manager of IDL and the MTN Project Field Officer. The discussions were all recorded using a voice operated recording (VOR) tape with the permission of the respondents. The recorded responses were transcribed and analysed.

The major challenge of this study was in conducting FGDs and KIIs with mobile population like the Fulanis. It was difficult meeting at agreed time as they had to take their cows out early for grazing. Also attempt to interact with the pastoralists children was almost stalled because they were unavailable in the early hours as their lesson hours were usually in the afternoon. Also, they were not forthcoming in discussing issues around them, probably as a result of the fear of offending their parents, but more so because, most of them only understood Fulani and could barely communicate in another language not even Hausa.

Results and discussion

Demographic and socio-economic characteristics of respondents

Table 2 shows the distribution of the respondents by some selected demographic and socio-economic characteristics. The distribution by age reveals that the age range 55-64 years had the highest number of

respondents (59.9 percent) followed by the age group 45-54 years with 21.9 percent. The age groups 35-44 years and 65 years and above had 10.3 percent and 5.8 percent respectively. Those who are less than 35 years constituted 2.1 percent. The mean age of the respondents interviewed was 55 years. The high proportion of respondents in the age group 55-64 years was not unexpected. Although a good number of the pastoralists who were members of the cooperative

societies were relatively young (under the age of 40 years), the household arrangement was such that they were still under an elder when it came to representation. The Fulani pastoralists have a system of respect in that when it comes to passing out messages or discussing the affairs of the Fulanis, the *ardos* (the clan chiefs) are usually saddled with such responsibilities. This probably explains the high proportion of respondents who were 50 years and above.

Table 2: Distribution by certain socio-demographic characteristics

Age Group*	Number	Percentage
Less than 15	0	0.0
15-24	1	0.4
25-34	4	1.7
35-44	25	10.3
45-54	53	21.9
55-64	145	59.9
65 and above	14	5.8
Total	242	100.0
Sex		
Male	225	93.0
Female	17	7.0
Total	242	100.0
Marital Status		
Never Married	0	0.0
Married	210	86.8
Divorced	10	4.1
Widowed	21	8.7
Separated	1	0.4
Total	242	100.0
Type of Marital Union		
Polygamous	174	71.9
Monogamous	68	28.1
Total	242	100.0
Level of Education		
None	53	21.8
Koranic	128	52.7
Primary Incomplete	36	14.8
Primary complete	10	4.1
Secondary Incomplete	8	3.5
Secondary Complete	5	1.9
Tertiary	3	1.2
Others	0	0.0
Total	242	100.0

*Mean age = 55years

The distribution of respondents by gender reveals that 93.0 percent of the respondents were males and 7.0 percent were females. The dominance of males in this study could be attributable to the fact that the study focused on those who were members of a cooperative society and were also head of households. Although, proportion of female headship of household has increased in the last two decades, female headship of households in Nigeria is still very low (National Population Commission and ICF Macro, 2009; National Population Commission, 2009). The practice of *purdah* (the Islamic practice of keeping women away from public view and in strict seclusion) is not very common amongst the Fulani pastoralists. However, socially and culturally, Fulani women are not to be seen divulging information pertaining to specific aspects of household livelihoods to 'a stranger'. Therefore the number of women respondents should expectedly be small.

Table 2 shows that all the 242 respondents in this study had ever married. In all, 86.8 percent were in marital union at the time of the survey, 13.2 percent were widowed, separated or divorced. Marriage is a proximate determinant of fertility; therefore, the high proportion of those in marital union has implications on current and future levels of fertility (National Population Commission and ICF Macro, 2009). The data on type of marital union reveals that 71.9 percent were in polygamous union as against 28.1 percent in monogamous union. Polygamy is very common amongst the Fulanis who are mostly Muslims. Islam is a religion that allows men to marry up to four wives.

The distribution of respondents by level of education shows that 74.5 percent had no formal education, this include 128 (52.7 percent) of those with Koranic education. A

total of 18.9 percent had primary education and 5.4 percent had any form of secondary education. Also, 1.2 percent of the respondents had tertiary education. Those with tertiary education were those with National Certificate of Education (NCE) and were mostly those teaching in the primary school in Ladugga Grazing Reserve.

The statistical test of the distribution by educational attainment shows that the calculated chi-square (χ^2) value (439.87) is greater than the observed value (14.1) at 0.05 percent and at 7 degrees of freedom. This implies that there is significant difference in the distribution of respondents by level of education. However, the general low level of education of the respondents is not unexpected as the Fulani pastoralists are generally known to have low school enrolment and attendance rates in Nigeria due to their nomadic life style that makes them to live in temporal settlement.

Household herd size

Respondents were asked the average number of cows per household and whether the number had increased or decreased in the last two decades. The data reveals that most respondents (82.9 percent) said the number of their cows had decreased in the last two decades, 6.8 percent had witnessed and increase in the average number of cows per household and 10.3 percent did not notice any change in the number of cows in the last two decades (See Figure 1). There are several reasons why the number of cows per household or per head has been decreasing. Hjort (1980) and Reckers (1997) have noted that pastoralists live in a political situation where grazing land cannot be expanded to meet the need of the pastoralists and where also the quality of the pasture has deteriorated due to over exploitation or changes in climatic events.

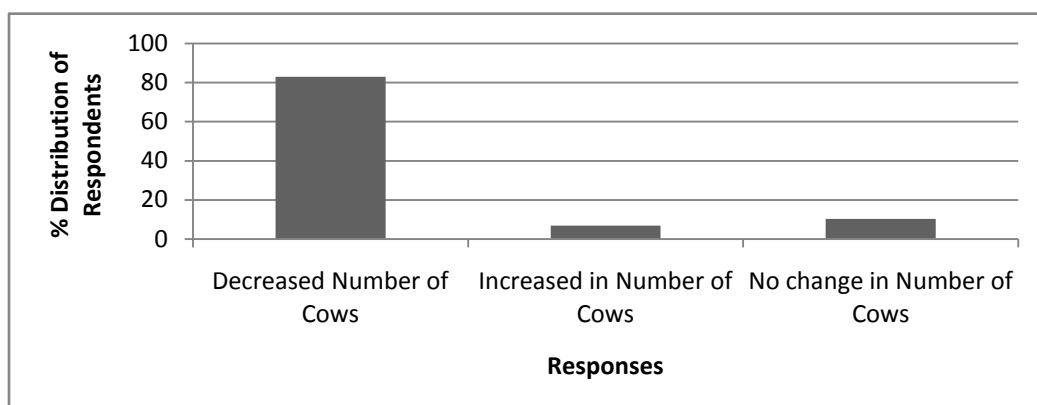


Figure 1: Pastoralists perception of increase/ decrease in number of cows in the last two decades

The decline in the average number of cows per household could also be as a result of the high mortality rate of cows due to the incidence and prevalence of diseases that are resistant to simple medication known to the Fulanis pastoralists. Fulainis have lost a lot of cows as a result of conflicts and litigations. Although, the pastoralists will like to increase their herds of cattle, however, virtually all interventions in the sector have favoured the idea of the pastoralists adopting sedentary lifestyles. This will require pastoralists to keep little number of cows that will serve household needs than having large herds of cattle that will necessitate nomadic movements. The MTN milk flow project seem to discourage pastoralists from having large herds of cattle as keeping large herds is not practicable and very uneconomical.

Impact of the milk flow project

In order to assess the impact of the project beneficiaries were asked to state what they considered were the impacts of the milk flow project. The impact of the MTN project was measured by assessing membership of cooperative societies, changes in the quantity of milk produced, number and quality of calves, mortality rate, school enrolment and attendance, contribution to income level and health seeking behaviour of the pastoralists. Table 3 shows pastoralists perception of the impact of the MTN project. The respondents agreed that the benefits of the milk-flow project included; formation of cooperative societies (100 percent), improvement in the quality of cows/calves (99.5 percent), increase in quality of milk (98.8 percent), development of pasture farms (98.3 percent), training and increased education of pastoralists (64.0 percent), reduction in cows' morbidity and mortality (63.2 percent) and living a sedentary life (56.9 percent).

Table 3: Perceived impact of the MTN milk flow project

Benefits/Impacts	Number	Percentage
Formation of Cooperative Societies	242	100.0
Development of Pasture Farms	238	98.3
Increase in the quality of milk	239	98.8
Training of Pastoralist/Increased Education	155	64.0
Improvement in Quality of cows/calves	240	99.5
Reduction in Morbidity and Mortality of cows	153	63.2

Sedentary Living	138	56.9
Improvement in animal health	160	66.1
Others	119	49.2

The project encouraged the pastoralists to engage in sedentary living because experts believe that movement of the cows from one place to another in search of food and water is not good. It actually increases the morbidity and mortality of cows and reduces the milk content of the cows, as they utilize the milk in the process of burning energy. Also, roaming about prevents children of pastoralists from enrolling and remaining in school.

Formation of cooperative societies

The pastoralists were asked to state some of the benefits of the Milk-flow project and how it has impacted on their livelihoods. Many of the Fulanis agreed that the project has encouraged them to form or belong to cooperative societies in order to access loans from banks and to ensure collective bargaining. Membership of cooperative societies enables the pastoralists to register with microfinance banks and access loans. Table 4 shows the eight (8) functional.

Table 4: Cooperative societies in Ladugga grazing reserve

S/N	Name of Society	Number of Households	Gender of members
1	BelaLadugga Pastoralist Herd Owners Association	78	Males
2	BalloI Ndurgol Multipurpose Society	49	Males
3	KautalKo'eDurobe Pastoralist Herd Owners Society	36	Males
4	BornoWeeti Women Multipurpose Cooperative Society	41	Females
5	KwassamNemban Women Cooperative Society	39	Females
6	TiggirdeBallaji Cooperative Society	27	Males
7	NaggeBeldumSappo Cooperative Society	17	Males
8	BalludiWainabe Cooperative Society	24	Males

Fulani cooperative societies in Ladugga Grazing Reserve. Out of the eight (8) cooperative societies, two (2) were found to be all-females cooperative societies. Women play significant role in the Fulani household structure, there is a clear division of labour with men mostly engage in milking the cows and the women produce the cheese and process the milk for sale. Although, from the discussion sessions and in-depth interviews, there are probably over 15 cooperative societies in Ladugga Grazing Reserve.

The eight cooperative societies have a total membership of 311 households (an average of about 39 households per cooperative society). The all-female cooperative societies have an average membership of 40 households per cooperative society. A cursory look at the goals and activities of most of these cooperative societies reveals

that they are all participating in community-based projects to generate revenue and to enhance pastoralists living standards. The discussants agreed that virtually all Fulani pastoralists in Ladugga belong to one or more cooperative society/societies, that was/were formed with the sole aim of improving the wellbeing of the Fulani pastoralists in view of the decline in the fortunes of the pastoralists over the years. One of the participants at one of the FGD stated.

We all belong to a society. Our association, Kautal Durobe, was formed as a way of helping us to draw maximum benefits from the animals. We pull resources together to carter for ourselves and our families, now that livelihood not as easy as before. We discuss ways of rearing our cows, draw maximum impacts of the cattle with the full believe that rearing of our cows will improve

our lives. Although, we had a few cooperative societies before the coming of the MTN project in 2007, the project has enlightened us on the need to belong to societies so as to harness maximum benefits (Early Beneficiary, Ladugga).

The pastoralists spoke well of the Milk-Flow project as most of the participants agreed that the project had helped them to appreciate the need to belong to a cooperative society to enhance their collective bargaining efforts and to help them pull resources together to maintain the exotic bulls and the young calves. According to one of the beneficiaries of the MTN milk flow project: *In the association we gather money to buy drugs and feeds for the Friesian bulls and with the help of the MTN and IDL, we have planted grasses which we hope to harvest and use to*

feed the bulls during the dry season. We are also gathering money to buy Kantu (Potash) to give the cows (Late Beneficiary, Ladugga).

Quality of cows and calves

The milk-flow project aimed at improving the quality of cows and calves since their quality have impact on the future wellbeing of the pastoralists. Pastoralists were happy with the quality of calves since the MTN project began. The health demand of the high breed bulls has increased the health seeking behaviour of the pastoralists, which has consequently led to a reduction in the mortality rate of calves and cows. Figure 2 shows that 63.2 percent of the pastoralists agree that the mortality rate of their cows and calves has reduced since the MTN milk flow project started in Ladugga Grazing Reserve. One of the

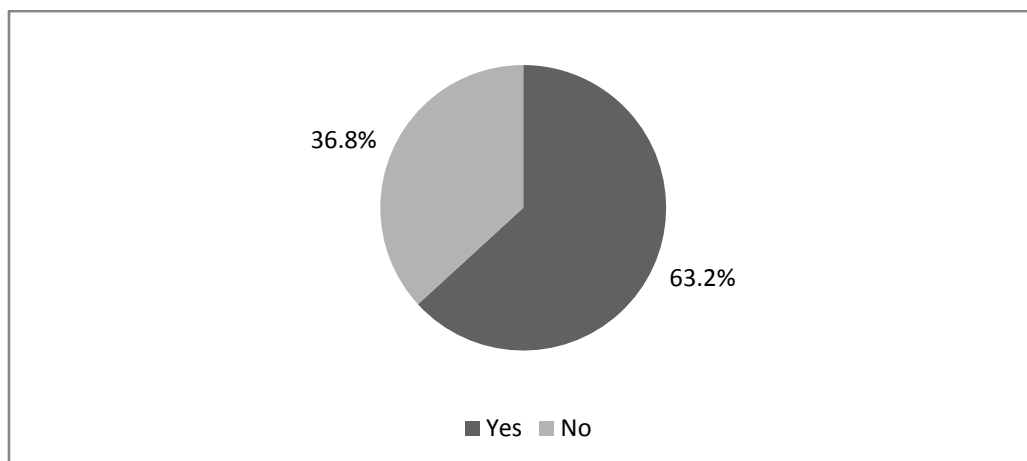


Figure 2: Perceived reduction in the mortality rate of cows and calves

major problems of the pastoralists in Africa especially now that climate change is having detrimental effect, is the high rate of mortality of cows, a trend observed not just in northern Nigeria but in the Guinea, Sudan and Sahel ecosystems (Warren, 2006). Participants at the FGD sessions agreed that the MTN project has helped improved the quality of their cows and calves. One of the late beneficiaries of the MTN project in Ladugga Grazing Reserve stated.

We have witnessed increase in growth of calves compared to the local ones that we have. The new calving from the crossing breeding is healthier than the local ones. A seven months calve is like a 3–4 years old local cow. In the aspect of milk flow, we still have the F1 generation that is yet to grow into maturity for milk flow production (Adamu, Late Beneficiary, Ladugga).

The above position was supported by one of the early beneficiaries, according to him:

We are very happy with the size and quality of calves that are being born from this crossbreeding. Yes! We had our fears, but it is common with us Fulanis to be sceptical about new things or ideas. Indeed, when this idea came up and IDF came to me to inform me, I was not convinced initially. I reluctantly accepted. Everyone in this village wanted to see the "magic" that would happen. I am happy to tell you that my cows have successfully given birth to eight young healthy calves (pointing to the eight calves tied to a tree nearby) without any casualty. To crown it, all the calves are females. It is probably a coincidence but that has endeared many people to the project (Ahmed, Early Beneficiary, Ladugga).

Initially a lot of skepticism trailed the project. Many of the pastoralists seem not to be convinced that the MTN project meant well to them. Many of the beneficiaries of the project only join the project after observing the impact it had in those who adopted early. Many of the pastoralists waited to see the performance of the project in its first one year before deciding on whether to join or not.

According to a participant, *when they first brought this project to this community, many people wanted to identify with the project, so since we are one, we now decided that those who have accepted, should go ahead while we observed what will happen. When they brought the bulls and gave them out, we then observed that it came with lots of benefits, and we started regretting why we did not start with others. We then decided to join the project (Late Beneficiary, Ladugga).*

The general opinion is that the milk flow project is a well-thought out project with immediate and long term benefits to the pastoralists not only in Ladugga Grazing Reserve but in other regions within the Upper Niger River Basin. According to the Head Teacher of one of the primary schools in Ladduga Grazing Reserve, the project has been of tremendous benefit to the pastoralists in Ladduga Grazing Reserve. In his own words:

We have benefitted from this project. Many of the cooperative associations have registered to get the high breed bulls that MTN through IDL have provided for us. Our cows now are beginning to give birth to the new calves from this cross breeding. You can see this calf (showing a young calf) she is only three weeks old. Our own local breed has to reach between 6 and 8 months old before she can reach this size. We are very excited with what we see. All the Fulani Associations in Ladduga are all happy to associate with this project. Even those who have not benefited from the project but who are seeing the types of calves that we are producing from this partnership are happy (Head Master, Ladugga Primary School).

Increase in milk production

One of the main objectives of the Milk-Flow project was to increase milk production to eventually increase the income of the pastoralists. Figure 3 shows the trend in the daily milk production. The average daily milk production in the Ladugga area has increased from 10.4 litres per family in 2007 to a little more than 31 litres in 2012, an increase of 203.8 percent in about five years.

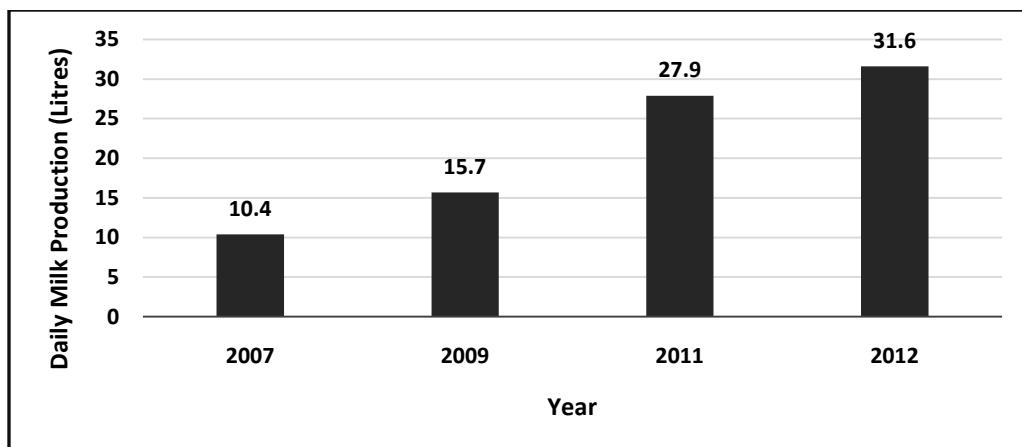


Figure 3: Trend in average daily milk production per family

To estimate the average production in 2012 given the observed distribution, a linear projection was made using Microsoft Excel trend line projection. The estimate showed that average daily milk production during the peak period (June-November) will increase to more than 37 litres per household in 2013 and beyond. With fresh milk selling at ₦300 per litre this will translate to about ₦11,100 (US\$68.52) per day or ₦335,000 (US\$2055.56) per month. If the factor of wastage and domestic consumption put at an estimated 11 litres per day is considered the total income per household from milk alone in 2012 will be over ₦173,040 or US\$1068.15 per month. This amount excludes income generated from the sale of cheese, which is a very rich and highly valued product obtained from the processing of milk. The bane of milk production in Ladugga is the high proportion of wastage due to crude production techniques and lack of storage facilities.

There is no doubt that the pastoralists have witnessed significant increase in milk production. As attested to by one of the discussants:

I am more educated concerning the upkeep of our cows. My cows produce more milk, now that I vaccinate them regularly and I

believe if we continue like this, we will produce more milk. Also, the drugs we get from this project have been very helpful to us (Early Beneficiary, Ladugga).

There is an average of three (3) families per household in Ladugga. Although, the average income of average households in Ladugga has increased, so also is the expenditure. The feeding requirements of one Freisian bull are equivalent to the feeding requirements of six local cows. Also, the bulls and calves are so delicate that they require so much medical care to enable them survive in the environment of Ladugga Grazing Reserve. This means that much of the profit from milk also goes into maintaining the cows, calves and bulls.

Training and school enrolment

One of the main objectives of the MTN milk flow project was to increase school enrolment. By increasing the proportion of people that live in a sedentary way, more and more pastoralists' children would be able to enrol in schools. The pastoralists were asked if the project has led to an increase in school enrolment and attendance. Figure 4 show that 67.5 percent the respondents agreed that the project has increased school enrolment.

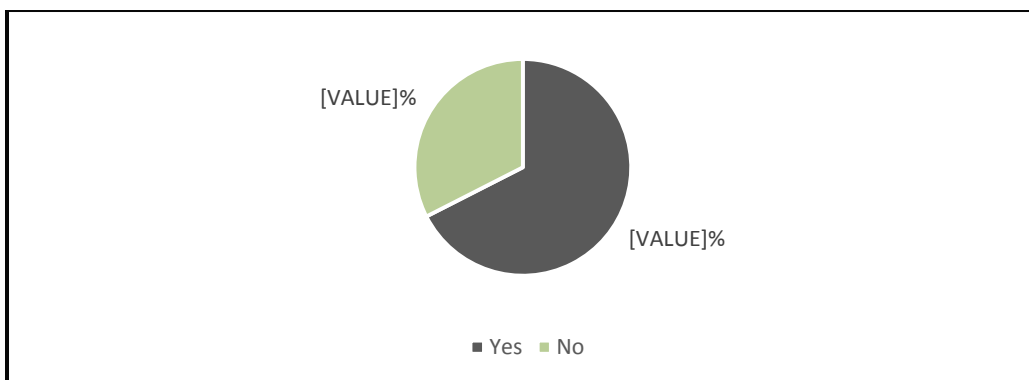


Figure 4: Response on whether the milk flow project has increased school enrolment

The MTN partnership with Integrated Diary Limited has encouraged pastoralists to send their children and wards to primary and secondary schools. Most of the schools are operating afternoon shifts to allow for the children to take the cows out in the morning. Besides the provision of exotic bulls, the Foundation has also established sustainable educational Projects that are in many ways benefitting the cattle rearers, their wives and children. According to one of the Fulani elders:

We did not understand what government meant by education. But with the MTN project, we have come to appreciate the need to be educated because now, our children are being trained in the computer and they do not even want to leave the computer. This is what MTN and IDL have initiated by encouraging sedentary life. Now we have time to do all that we are enjoying now....yes our children go to rear cows in the morning and go to school in the afternoon. I see it as a gradual process of adopting sedentary life. Since they have to go to school in the afternoon, they tend not to go far when they take the animals out in the morning (Clan Head (Ardo), Ladugga).

As part of the project deliverables, the pastoralists have also received other forms of education in form training on how to care for the bulls and how to ensure hygienic handling of the milk. According to the pastoralists at the discussion sessions, these trainings were

done in the form of training workshops to educate the pastoralists. Although the workshops were not regular, the pastoralists agreed they received adequate training on how to handle their cows and ensure hygienic ways of handling their milk and related products. In respond to the question on whether they have been well trained, a pastoralist opined:

I went for the training too. I learnt a lot from this training, which excites me and gladdens my heart. When we were called to Vom (Jos) to attend this training, they showed us the MTNF/IDF bulls and herd of cattle's that we have never seen. They showed us the type of feed they fed on and they showed us the milk from the cows. They also showed us fodder bank which made me happy. I also saw the way they rear the cattle which were different from ours (Early Adopter, Ladugga).

Besides the training on how to maintain their animals they also received training on how to secure loans to improve the workings of their cooperatives. This fact was made clear by a participant at one of the discussion sessions:

I went for the workshop too. Firstly, the workshop enlightened us on ways of cross-breeding the Friesian bull with our cows. Secondly, they advised us on how to feed our cows. Thirdly they called us and enlightened us on how to secure loans. We were linked to the Bank of Industry (BOI) concerning the loan, so you can see that we now have an

idea of where to get loan from (Early Beneficiary, Ladugga).

Some beneficiaries however, had mixed feelings on the training anchored by IDF suggesting that not all participants/beneficiaries were trained. One of the beneficiaries had this to say on this:

We have never being to any town for training but whenever they visit us, they instruct us on what to do. Sometimes when we see that our cattle are looking sick or are sick we call them on phone, to check them (Late Beneficiary, Ladugga).

Although participants generally spoke well of the training they received from IDF, it is very obvious that IDF has conducted fewer training workshops or in-house training to the benefitting Fulanis. A lot of training is required for the Fulanis to be able to meet the objectives of the project. This may not be very adequate given the socio-economic status and the operating environment of the benefitting Fulani pastoralists.

Mobility of Fulani pastoralists

It widely accepted that the main reason pastoralists have been able to cope with changes in climatic events is because they move from one place to another. This movement is considered to be good because when they move they allow trees and grass to grow in the place. One of the main objectives of this project is to encourage sedentary life style among the Fulani pastoralists. Respondents were asked if sedentary living has tremendous benefits than nomadic life style. Figure 5 shows that 46.4 percent of the respondents agreed that sedentary living has more benefits than nomadic ways of life, 35.1 percent disagreed while 18.5 percent could not say agree or disagree. While the pastoralists perceived that sedentary life style could improve their health and that of their animals, nomadic living is considered a traditional way of coping with the vagaries of weather in pastoralists enclaves.

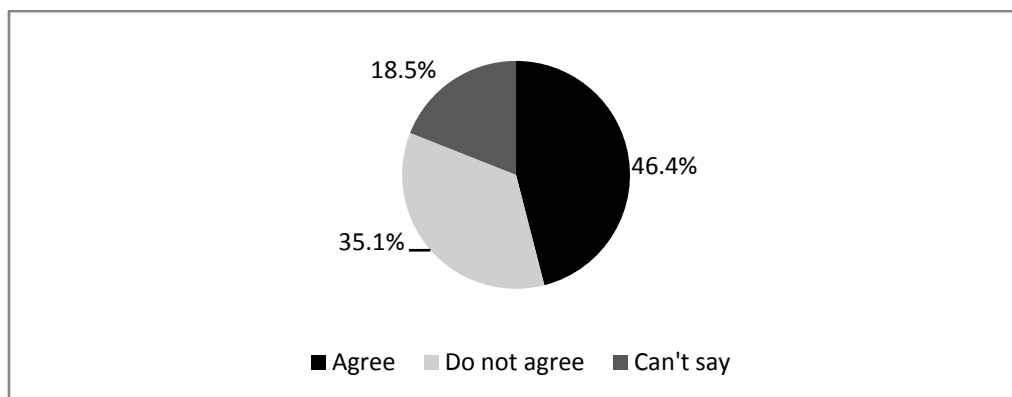


Figure 5: Distribution by opinion on the benefits of sedentary life style

Before the project started the Fulani pastoralists were using indigenous knowledge and all kinds of trial and error methods to keep their animals healthy. But all their efforts in most cases ended at nothing because the animals were usually taken on the long tortuous journey in search of grass and water, further endangering the lives of

these animals. Many of the pastoralists admitted that the project has been of tremendous benefit to them as it has led them to realise the benefits of sedentary life style, although, it would be difficult for them to practice it. According to one of the beneficiaries:

Before it takes a while before our cattle grow fat.....Now our cattle have improved and even the quantity of milk has increased. We did not know that moving up and down stresses our animals. We have seen the cows of the IDL looking fat and healthy because they graze around (Late Beneficiary, Ladugga).

Many of the pastoralists have started appreciating the advantages of keeping their stocks small and hence avoiding the desire to move from one place to another in search of food and water. Sustained advocacy and enlightenment programmes coupled with informal training programmes have helped them to appreciate staying in one location. Some of the pastoralists are beginning accept this view point as started by one of the officials of one of the cooperative societies: We have been well educated by MTN and the partners. They have encouraged us to keep fewer cows to reduce the chances of migrating from place to place in search of fodder. Some of us that have accepted their advice are beginning to see the sense in their talk. Although, there are other benefits of moving from place to place but we do not have to run from one place to another and our children can have time to go to school.

The opinion on sedentary living however, varies. A few of the pastoralists think that sedentary living is meant for those Fulani cattle rearers that are too weak or lazy to embark on any long journey.

Conclusion

This paper has provided an insight into how direct intervention by the private sector can go a long way in improving the livelihoods of people, especially the Fulani pastoralists. It utilized simple methods of data collection and analysis that identified the impact of the MTN milk flow project within a geographical area. The analyses indicate the benefits and challenges of the project. Although, there were initial scepticism about the project, as it was seen as an attempt to force the pastoralists to abandon the

traditional methods, pastoralists are satisfied with the positive impact of the project. The quality and the quantity of milk have increased, so also is the health seeking behaviour of pastoralists.

The major challenges facing the Fulani herdsmen in Ladugga Grazing Reserve are the inadequate funds to initiate and or maintain projects that serve to reduce their vulnerability to changes in climatic events. There is need for more private sector participation to assist the pastoralists in the grazing reserves. This could come in form of the creation of fodder banks and provision of microfinance banking services in the grazing reserves.

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