ASSESSING THE ECONOMIC IMPACT OF LIVESTOCK THEFT IN THE EASTERN CAPE PROVINCE OF SOUTH AFRICA

Subtheme: Knowledge & information

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Abstract:

All the provinces in South Africa are affected by livestock theft and this threatens the profitability and sustainability of livestock farmers. Animal products comprised 49% of the total gross value of South Africa's agricultural products in 2014/15. In 2014, livestock losses amounted to approximately R509 million and the main concern is that official statistics are underestimated. While available literature has investigated the direct costs of stock theft, no scientific investigation has focused on the indirect cost of stock theft. To ascertain the true financial impact of livestock theft, both the direct and indirect costs are required. The primary objective of this study is to determine the financial impact of livestock theft in the Eastern Cape Province. In order to achieve this, the direct cost of livestock theft (value of the livestock lost), as well as the indirect cost of livestock theft (the financial impact of loss-controlling practices), will be investigated. The total annual cost of livestock theft in the Eastern Cape Province according to the data, was calculated at R196 167 623. This value emphasizes the importance of livestock theft control in the Eastern Cape.

Keywords: *Livestock theft, Direct cost, Indirect cost, Total cost*

Introduction

Livestock theft is considered by some to be as old as farming itself (Clack, 2013). All nine South African provinces are affected by stock theft and it has been declared a priority crime in most of the provinces (PMG, 2010). Livestock theft is a threat to South African livestock producers with an impact not only on the profitability of the industry but also on meat prices, the sustainability of livestock farmers, as well as food security (Maré, 2014). Livestock theft creates tension and can evolve into violent acts in some instances (Africa check, 2015). It is mostly organized syndicates working together with ordinary shepherds and speculators who are involved in livestock theft (Sherry, 2012).

Both South Africa's commercial and emerging farming sectors are affected by stock theft. Areas near or adjacent to the country's borders are more prone to be affected by livestock theft. In some cases, farmers in the Eastern Cape have given up sheep farming due to the high livestock theft rate (PMG, 2010).

The South African livestock industry remains one of the major role players in South Africa's agriculture. Animal products contributed 49% (R108 429 million) of the total gross value of South Africa's agricultural products in 2014/15 (DAFF, 2015). Slaughtered cattle and sheep contributed R26 335 million and R6 238 million respectively (Economic review of the South African agriculture 2014/15, 2015). Livestock losses have amounted to 20% of the Gross Domestic Product (GDP) in some of South Africa's provinces (Clack and Schutte, 2015) and it was the third most experienced household crime in 2011 (Lehohla, 2014). In 2014 the reported livestock theft of goats, cows and sheep amounted to approximately R509 million (Clack and Schutte, 2015). In 2015, 32 986 cattle valued at R343 054 400 were lost (stolen animals minus recovered animals) to stock theft in South Africa. During the same period, 63 477 sheep and 24 776 goats valued at almost R108 million and R48 million respectively, were lost due to stock theft (South African Police Service, 2015). On average, 30 000 cases of stock theft are reported to the South African Police Service (SAPS) per year (Maré, 2014). Of even greater concern is the fact that the official stock theft numbers and value of losses are underestimated (Scholtz & Bester, 2010; Clack, 2013). One of the contributing factors to this state of affairs can be that 70.7% of livestock theft cases were unreported for the period April 2015 – February 2016 (Victims of Crime Survey, 2016).

While available literature has investigated the number of animals lost (direct costs of stock theft), limited scientific investigation has focused on which loss-controlling practices farmers are using and the cost of these practices (indirect cost of stock theft). To realize the true financial impact of livestock theft, both the direct and indirect costs are required.

The primary objective of this study is to determine the total financial impact of livestock theft in the Eastern Cape province of South Africa. In order to achieve the primary objective of this study, it will be necessary to calculate the direct cost of livestock theft (the value of the livestock lost) as well as the indirect cost of livestock theft (the financial impact of loss-controlling practices).

Material and methods

The Eastern Cape Province of South Africa, which is the focus of the study, is situated in the eastern-most part of South Africa (Figure 1). The Eastern Cape is divided into two metropolitan municipalities: Buffalo City and Nelson Mandela Bay, and then further divided into six district municipalities namely: Alfred NZO, Amathole, Chris Hani, Joe Gqabi, OR Tambo and Sarah Baartman (Figure 2).

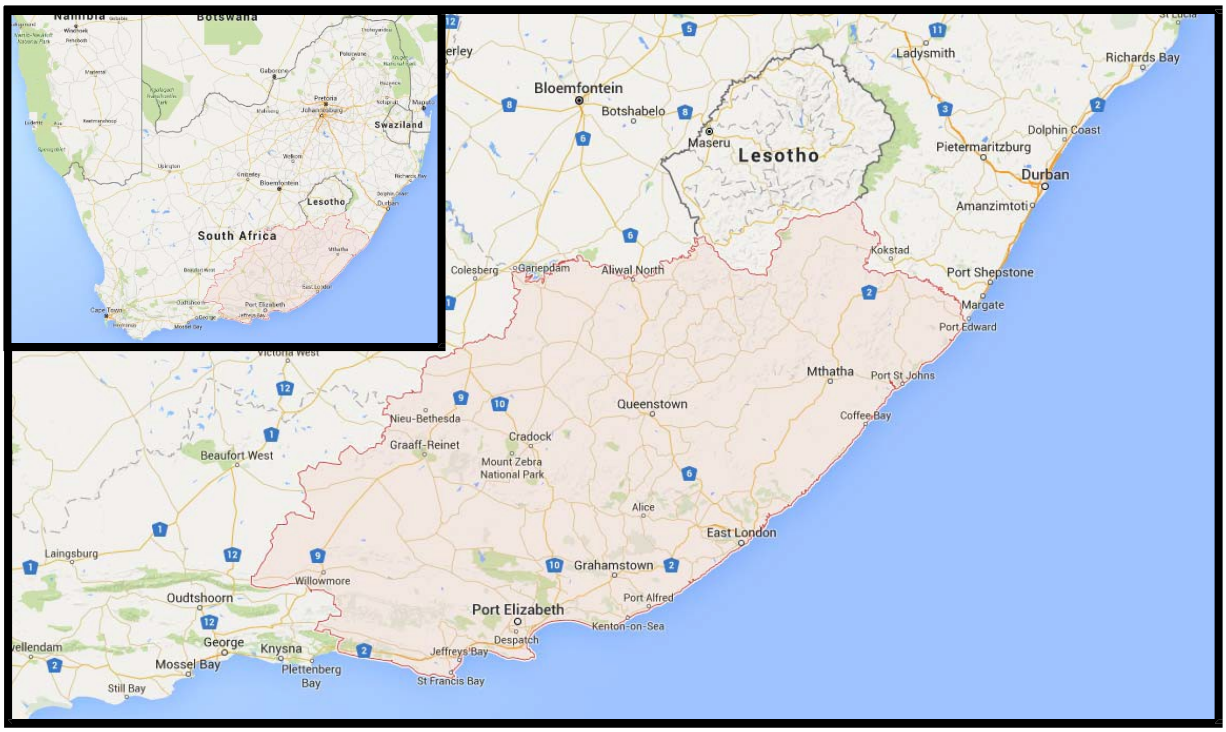

Figure 1: Geographical location of the Eastern Cape Province

Source: Google Maps (2016)

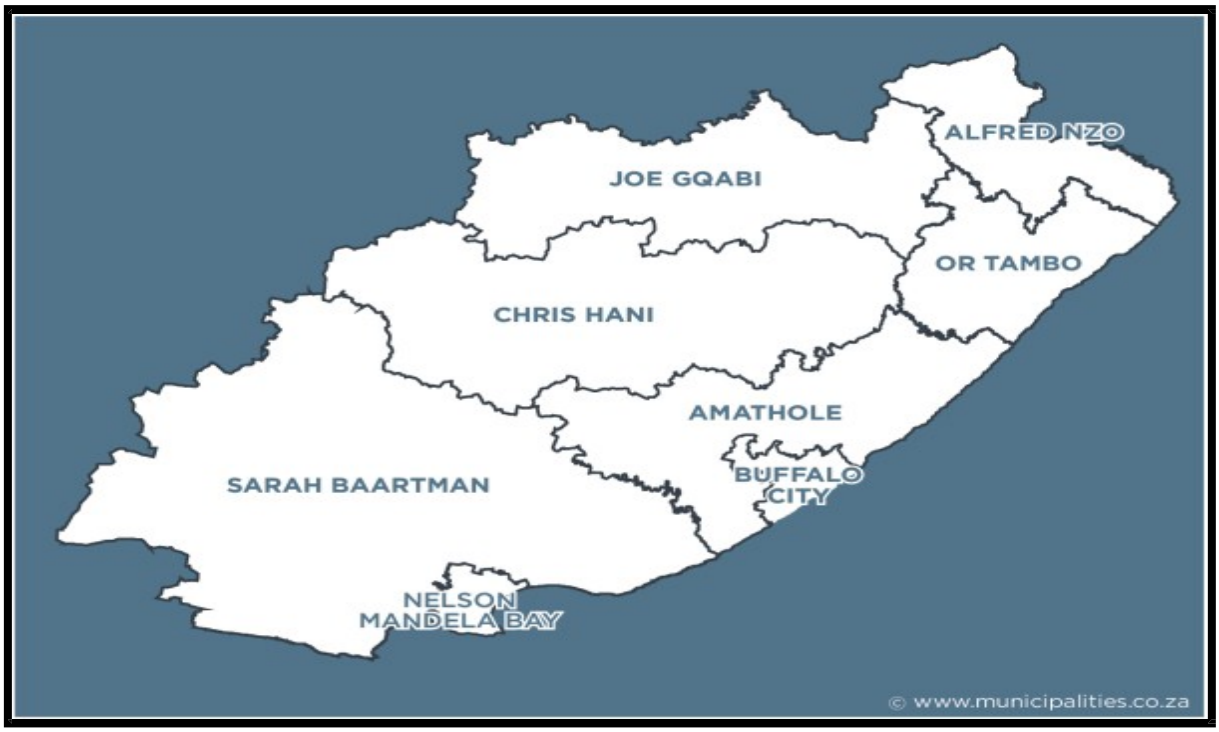

Figure 2: District Municipalities of the Eastern Cape

Source: The Local Government Handbook (2016)

The Eastern Cape has a total land size of 16 896 600 ha, which is the second largest province in South Africa and one of the poorest provinces, even though consisting of excellent agricultural and forestry potential (The Local Government Handbook, 2016). The farming sector consists of 87.7% of the total land size of the Eastern Cape. Commercial farmers occupy 10.8 million hectares of land while emerging farmers utilize 4 001 856 hectares (DAFF, 2013). Grazing land in the commercial sector consists of 85.6% and the emerging sector consists of 67.1% (DAFF, 2013). Commercial livestock farming in the Eastern Cape Province consists of 964 462 cattle, 4 572 677 sheep and 535 810 goats (DAFF, 2016). The livestock number supplied by the Department of Agriculture, Forestry and Fisheries shows no figures for livestock in the Alfred NZO and OR Tambo district and will therefore, not form part of the study. Furthermore, the data for the two metropolitan municipalities: Buffalo City and Nelson Mandela Bay, were combined with the Amathole and Sarah Baartman Districts respectively, to form the Greater Amathole and Greater Sarah Baartman districts.

A stratified random sampling process was followed for this study whereby livestock farmers within the Eastern Cape Province were divided into different subpopulations

within the province according to their farms' demographic and topographic locations. This method of sampling was chosen so that comparison and correlation between the different subpopulations can be done (Cochran, 1977; Feinberg, 2003). By following this method, it also ensures that only livestock farmers were interviewed. The questionnaire was administered to the selected farmers during a telephonic interview. The selected farmers were telephonically contacted between August and December 2015. Telephonic interviews were used because the data can be obtained immediately, it saves time and the answers can be explored while interviewing respondents (MacDonald & Headlam, 2008). In total, the data from 225 questionnaires (farmers) were used for the study. The representativeness of the data (Table 1) indicates that the farmers that were interviewed roughly represent 7.28% of the sheep, 6.14% of the cattle and 12.26% of the goats in the Eastern Cape Province.

Table 1: Livestock numbers captured in the data compared to livestock numbers in the Eastern Cape.

District municipality	**Greater Sarah Baartman**	**Greater Amathole**	**Chris Hani**	**Joe Gqabi**	**Total for the Eastern Cape**
Sheep in Province	1 413 064	638 584	1 149 790	1 371 239	**4 572 677**
Sheep in study	89 360	78 750	99 378	65 375	**332 863**
Percentage of sheep represented in study (%)	6.32	12.33	8.64	4.77	**7.28**
Cattle in Province	328 508	245 273	185 109	205 572	**964 462**
Cattle in study	14 155	18 055	17 068	9 956	**59 234**
Percentage of cattle represented in study (%)	4.31	7.36	9.22	4.84	**6.14**
Goats in Province	409 163	50 303	65 024	11320	**535 810**
Goats in study	54 463	4 100	7 093	20	**65 676**
Percentage of goats represented in study (%)	13.31	8.15	10.91	0.18	**12.26**

Source: DAFF (2016) and Author's data collected.

Quantification of the direct cost will consist of two calculations. Firstly, the total number of livestock[1] lost annually in the Eastern Cape Province per district municipality will be calculated as follows:

$L = R \times S$

Where:

R = the annual loss rate per district municipality (%)

S = the total number of livestock per district municipality

L = the total number of livestock lost annually per district municipality

The livestock lost annually per district will be added to calculate the total number of livestock lost annually in the Eastern Cape Province. Once the total losses are determined, the monetary value of the losses[2] will be calculated as follows:

$C = L \times P$

Where:

L = the total number of livestock lost annually in the Eastern Cape Province

P = the unit cost per animal

C = the total annual direct cost of livestock theft in the Eastern Cape Province

To calculate the annual loss rate in the study, the number of animals stolen was taken and the number of animals retrieved was deducted to calculate the number of animals lost annually (not recovered by the police or by the farmers themselves). This number is then divided by the number of animals represented in the survey and expressed as a percentage. This annual loss rate indicates the rate at which animals are lost annually.

To assign a monetary value to losses is difficult if animals are not at the point of sale (Van Niekerk, 2010); however, the National Livestock Theft Forum decided on values of R10 400 per head of cattle, R1 700 per sheep and R1 950 per goat during the RPO National Congress in 2012 (RPO, 2012). One could argue that this value is an

[1] Note that these calculations were done separately for sheep, goats and cattle.

[2] Note that these calculations were done separately for sheep, goats and cattle.

overestimation for all animals; however, this value will serve as a basis from which to work and could be changed for other analyses (Badenhorst, 2014).

Available studies on livestock theft have only explored the cost of animals lost (direct cost) while ignoring the cost of loss-controlling practices (indirect cost) performed by farmers. The indirect cost structure differs from that of the direct cost. The indirect cost was calculated by adding all the expenses incurred towards controlling sheep livestock theft by Eastern Cape Province farmers, while ignoring the cost of replacement animals. Theft control methods and actions were identified from the data in order to create an idea of what farmers are really doing to control livestock theft in the Eastern Cape Province. Indirect costs were calculated as follows:

$K = M / N \times 100$

Where:

K = the total annual cost of control practices and methods per district in the Eastern Cape

M = the total annual cost of control practices and methods per district in the study

N = the percentage of livestock represented per district in the survey

The process of quantification used in this study is similar to that of Moberly (2002), Van Niekerk (2010) and Badenhorst (2014). In all of these studies, the direct and indirect cost were calculated to represent the total cost of losses. Scholtz & Bester (2010) only calculated an annual loss rate (%), as will also be done in this study.

Results

The primary objective of this study was to determine the total cost of livestock theft in the Eastern Cape Province of South Africa. In order to determine the total cost of livestock theft, it is necessary to determine both the direct (animals lost) and indirect cost (cost of a controlling stock theft) of stock theft. Investigation of sheep theft (Table 2) showed that the Chris Hani district municipality experiences the highest annual loss rate at 2.12% and the Joe Gqabi district the lowest annual loss rate at 0.75%. The high loss rate in the Chris Hani district indicates that 24 376 sheep to the value of R41 439 200 were lost annually in the district municipality. The Greater Amathole district

municipality lost the lowest number of sheep annually at 6 067 (R10 313 900). The total direct annual cost of sheep theft was calculated at R89 654 600 with 52 738 sheep being lost.

Table 2: The direct cost of sheep theft in the Eastern Cape Province per district

District municipality	Annual loss rate in survey (%)	Number of sheep within the study	Total number of sheep lost annually according to the survey	Annual direct cost according to the survey
Greater Sarah Baartman	0.85	1413064	12011	R 20 418 700
Greater Amathole	0.95	638584	6067	R 10 313 900
Chris Hani	2.12	1149790	24376	R 41 439 200
Joe Gqabi	0.75	1371239	10284	R 17 482 800
Total		4572677	52738	R 89 654 600

Source: Author's Estimation

According to the collected data, the highest annual cattle theft rate (Table 3) was experienced in the Greater Sarah Baartman district at 0.20%. This high loss rate lead to the largest number of cattle being lost annually in this district (657). The total annual direct cost of cattle theft in the Eastern Cape was calculated at R 12 937 600.

Table 3: The direct cost of cattle theft in the Eastern Cape Province per district

District municipality	Annual loss rate in survey (%)	Number of cattle within the study	Total number of cattle lost annually according to the survey	Annual direct cost according to the survey
Greater Sarah Baartman	0.20	328 508	657	R 6 832 800
Greater Amathole	0.06	245 273	147	R 1 528 800
Chris Hani	0.06	185 109	111	R 1 154 400
Joe Gqabi	0.16	205 572	329	R 3 421 600
Total		964 462	1 244	R 12 937 600

Source: Author's Estimation

According to the calculations as shown in Table 4, Joe Gqabi District municipality experienced the highest annual goat loss rate at 6.67%. The lowest annual loss rate was found in the Greater Sarah Baartman municipality (0.98%); however, due to a large number of goats kept in the district, the largest number of goats is lost in this district municipality at 4 010 (R7 819 500). The total number of goats lost annually in the Eastern Cape was calculated at 8 212 with a total direct cost of goat theft at R16 013 400.

Table 4: The direct cost of goat theft in the Eastern Cape Province per district

District municipality	Annual loss rate in survey (%)	Number of goats within the study	Total number of goats lost annually according to the survey	Annual direct cost according to the survey
Greater Sarah Baartman	0.98	409163	4010	R 7 819 500
Greater Amathole	1.54	50303	775	R 1 511 250
Chris Hani	4.11	65024	2672	R 5 210 400
Joe Gqabi	6.67	11320	755	R 1 472 250
Total		535810	8212	R 16 013 400

Source: Author's Estimation

The direct annual cost of sheep, cattle and goat theft is combined in Table 5 to calculate the total annual direct cost of livestock theft in the Eastern Cape. The results suggest that the total annual direct cost of stock theft is R118 605 600. The largest losses to stock theft were experienced in the Chris Hani District (R47 804 000), and the second largest losses were experienced in the Greater Sarah Baartman District (R35 071 000).

Table 5: The total annual direct cost of livestock theft in the Eastern Cape Province per district

District municipality	Annual direct Sheep cost according to the survey	Annual direct Cattle cost according to the survey	Annual direct Goat cost according to the survey	Total annual direct cost of livestock theft according to the study
Greater Sarah Baartman	R 20 418 700	R 6 832 800	R 7 819 500	R 35 071 000
Greater Amathole	R 10 313 900	R 1 528 800	R 1 511 250	R 13 353 950
Chris Hani	R 41 439 200	R 1 154 400	R 5 210 400	R 47 804 000
Joe Gqabi	R 17 482 800	R 3 421 600	R 1 472 250	R 22 376 650
Total	R 89 654 600	R 12 937 600	R 16 013 400	R 118 605 600

Source: Author's Estimation

In order to reach the primary objective of the study it was necessary to calculate the indirect cost of stock theft in addition to the direct cost of stock theft. Only then will it be possible to calculate the total cost of livestock theft. The district municipality with the largest annual indirect cost was the Greater Sarah Baartman District with a cost of R33 380 969. The total annual indirect cost of livestock theft in the Eastern Cape Province was calculated at R77 562 025. The Greater Sarah Baartman district proved to experience the largest total annual cost of stock theft at (R68 451 969) and Chris Hani district experienced the second largest total annual cost (R65 657 367). According to the data, the total annual cost for stock theft in the Eastern Cape Province was calculated at R196 167 623.

Table 6: The indirect and total cost of livestock theft in the Eastern Cape Province.

District municipality	Total annual indirect cost of livestock theft according to the study	Total annual direct cost of livestock theft according to the study	Total annual cost of livestock theft according to the study
Greater Sarah Baartman	R 33 380 969	R 35 071 000	R 68 451 969
Greater Amathole	R 8 397 961	R 13 353 950	R 21 751 911
Chris Hani	R 17 853 367	R 47 804 000	R 65 657 367
Joe Gqabi	R 17 929 726	R 22 376 650	R 40 306 376
Total	R 77 562 025	R 118 605 600	R 196 167 623

Source: Author's Estimation

Conclusion

If livestock theft is not curbed, it will not only threaten the profitability or sustainability of the South African livestock industry but also the competitiveness of the industry. Livestock theft has a significant financial impact on the Eastern Cape's livestock industry with a value of approximately R196 million (direct and indirect cost). The direct cost of livestock theft proved to be roughly R118 million and the indirect cost was calculated at an additional R77 million. This study is the first of its kind to investigate the indirect cost of livestock theft in the Eastern Cape.

It is recommended that additional support should be provided to livestock farmers and that the existing institutions should be better managed to provide better support to farmers. Based on the results it is clear that loss-prevention practices should be investigated to lower livestock theft. It is recommended that farmers, Farmer Unions and the SAPS or stock theft units work together to secure farms situated close to towns and public roads. All livestock farmers are advised to make sure that all their animals are branded or tattooed as it assists in the identification of recovered livestock. Furthermore, farmers or shepherds should count the livestock on a daily basis to ensure early detection of losses that will improve the chances of successfully retrieving lost animals. With that said, it is the farmer's responsibility to report stolen livestock to the South African Police Service or to a nearby stock theft unit to ensure a better chance of retrieving stolen

livestock and that official statistics will represent more accurately the seriousness of livestock theft.

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